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STUNDA MIDWIFERY
FOR
SES AND MIDWIVES

G. T. WRENCH

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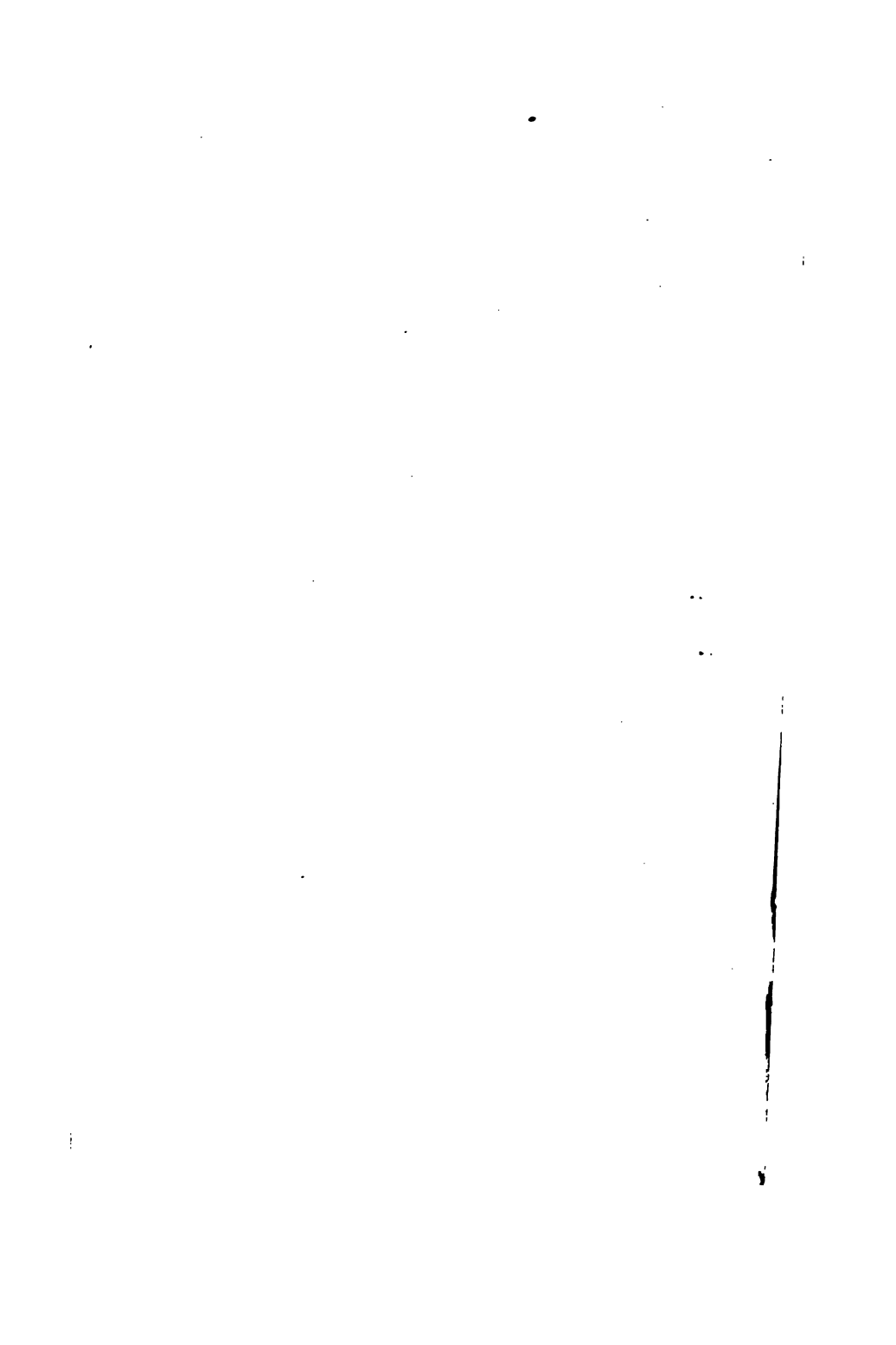
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OXFORD MEDICAL PUBLICATIONS

**ROTUNDA MIDWIFERY
FOR NURSES AND MIDWIVES**

G. T. WRENCH, M.D

OXFORD MEDICAL PUBLICATIONS

ROTUNDA MIDWIFERY
FOR
NURSES AND MIDWIVES

BY

G. T. WRENCH, M.D

Late Assistant Master Rotunda Hospital

WITH INTRODUCTION BY

THE MASTER OF THE ROTUNDA HOSPITAL

THE ROTUNDA HOSPITAL

LONDON

HENRY FROWDE HODDER & STOUGHTON
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PREFACE

WHEN teaching nurses at the Rotunda Hospital I was often impressed with the difficulty they had in understanding the manuals provided for them.

This book is intended to give to nurses and midwives the knowledge they actually need as clearly and practically as possible. Thus the anatomy of organs and bones has not been divorced from their function, but the two being interdependent are described together, in order that anatomy may not be learnt in parrot fashion, but that its bearing on the processes of childbearing may be immediately appreciated.

In a similar manner, as practice has a special power of appeal, the various conditions that may be met have been grouped and classified from a practical point of view, so that the main duties of a midwife may be remembered with the help of a few simple rules.

Technical language has been avoided as far as possible, but when its use is necessary, it has been fully explained in the text and the derivation of the words has been given.

It is hoped that in this way the subject of midwifery may present fewer difficulties for nurses and midwives, but it must be remembered that reading is only an adjunct to careful observation of cases, and that knowledge becomes more permanently assimilated, if in the interludes of reading and practical work, pupils ponder on and commit to the memory of their thoughts that which they have read or seen.

I gratefully acknowledge the courteous permission of

the Central Midwives Board to add their rules in an Appendix.

Their requirements have been closely followed in this book.

The methods given are those at present in use at the Rotunda Hospital; for their knowledge, and for most helpful friendship and advice, freely given, I am deeply beholden to the present master.

G. T. WRENCH.

INTRODUCTION

THE great interest manifested by Dr. Guy Wrench in teaching maternity nurses during the comparatively brief period in which he occupied the position of Assistant Master in the Rotunda Hospital, made me feel that a book written by him for their instruction would be possessed of more than ordinary interest, and it is with great pleasure that I now have the opportunity of reading his work prior to publication.

The influence and authority of the Central Midwives Board must be carefully taken into consideration by nurses in their training, and a teacher should carefully weigh his opinions so that the views he expresses should be in conformity with those held by the Central Midwives Board, or by those who conduct their examinations.

Dr. Wrench has kept before him the rules and regulations of this body, and has (so far as I can judge) written a book which will enable nurses in training to direct their courses of study in such a manner as to meet with the full approval of the Central Midwives Board.

The book is interesting reading to the initiated, and so singularly free from technicalities that it will not be difficult even for a beginner to acquire a sound theoretical knowledge of her work from it.

Dr. Wrench could not have produced this book had he not been a close observer of the difficulties which beset the path of the woman possessed of no technical knowledge who suddenly finds herself placed as a probationer in a large hospital. Her surroundings are unfamiliar and she must of necessity be in a state of considerable confusion at first.

From this bewilderment of mind she is expected within a few months to emerge with her full qualifications, and a knowledge that embraces much of the important procedure of the fully trained nurse, and in addition the difficult specialized work necessary for the midwife.

I have said that the difficulties are great even in the case of a woman who comes for her six months to a maternity hospital, but how much more difficult must it be for those who elect to satisfy the requirements of the Central Midwives Board by a course of study outside a hospital.

To all those who find it a confusing task to master the essentials of midwifery I strongly recommend this book.

ERNEST HASTINGS TWEEDY,
MASTER ROTUNDA HOSPITAL.

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CHAPTER I

INTRODUCTORY

What is the Meaning of the word Midwife?—The word midwife comes from two Anglo-Saxon words, *mid*, together with, and *wif*, woman. A midwife is a person, either male or female, who is with the woman when she has a baby. The term midwife is nowadays restricted to trained nurses who attend women when they have their babies.

The work that Midwives do.—Dr. Cullingworth states that probably one-half to three-quarters of the babies born in England and Wales are delivered by midwives (*Contemporary Review*, March, 1898). This shows that midwives are of great public importance, for upon them depends the good health of the greater proportion of the mothers of England.

Why does the Good Health of Mothers depend on the Midwives?—The good health of married women depends more upon their being well during child-birth and the lying-in period than upon anything else. When midwives are ignorant and uncleanly in their care of patients, their patients get fevers and other diseases, which sometimes kill them and frequently make them invalids. In the old days, when careful midwifery was not so well understood as it is now, these diseases and fevers were very much more common than they now are. If midwives are ignorant and unclean now, their patients always suffer. If the midwives know their midwifery and are clean, their patients do not suffer and are greatly benefited by their care.

What is the Midwives Act?—The public importance of good

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and skilful midwives was felt to be so great, that in 1902 an Act of Parliament was passed "to secure the better training of midwives and to regulate their practice." By this Act, every woman who practises as a midwife (or midwifery nurse) is bound to be certified under the Act, under penalty of a fine not exceeding five pounds. From and after April 1, 1910, no unqualified woman will be allowed to help another woman, when she has her baby, and receive payment for doing so. Until April 1, 1910, she can do so, as long as she does not call herself a midwife. At present, however, this Act does not extend to Ireland or Scotland, and therefore a nurse who has passed the Rotunda examination and received the Rotunda certificate, can legitimately practise as a midwife in Ireland or Scotland without being certified under the Act.

What is a Nurse to do, if she wishes to practise in England or Wales as a Midwife?—She must become certified under the Act. To do this she will have to send certain certificates to the Central Midwives Board, who carry out the Act, and will have to pass an examination. If she satisfies the Board, she will receive a certificate from them and she will then be able to practise with the legitimate title of midwife, instead of practising obscurely without being allowed to call herself a midwife.

Therefore, if a nurse intends to practise in England or Wales she should write to the Secretary of the Central Midwives Board, Caxton House, Westminster, London, and ask for a copy of their regulations, and a copy of the Midwives Act of 1902. She must inclose the cost, namely 7½d., and a stamped, addressed envelope.¹

Value of the Midwives Act and Central Midwives Board.—They supply a need that is generally felt by medical men to be an urgent one. In the days before the Act no one had any proper control of midwives. The death rate and disease amongst women they attended was felt to be far

¹ The present rules of the Central Midwives Board are given in an appendix to this book. You are advised to send for the rules yourself, as a revised edition is to be issued shortly.

greater than was necessary, and the Act and Board intend to stop this disastrous and unnecessary amount of illness, by being sure that the midwives are properly trained, and also by superintending their work in a friendly manner through a local supervising authority. In all districts in England and Wales, local supervising authorities have been appointed and they occasionally come and see the midwives. They see that midwives understand and carry out the principles of cleanliness, and help them, as far as they can, by telling them any improvements that have been discovered, and giving them advice as to how they may carry on their practices more efficiently. A certified midwife keeps a register of her cases, which she shows to the supervising authority, and he supplies her with forms, which she sends to him when any death or still birth occurs under her care in the absence of a doctor.

Elementary Midwifery that the Central Midwives Board require their Midwives to know.—The knowledge of elementary midwifery required by the Central Midwives Board is practically identical with that which a Rotunda nurse is expected to know. As this is so, and as the list of subjects required by the Central Midwives Board is a very good one, I have arranged this book according to their requirements, following, of course, the teaching of the Rotunda Hospital, which with the Coombe and certificate of the Royal College of Physicians of Ireland, are recognized and approved by the Midwives Act of 1902 (Section 2).

Scheme of this Book.—I shall then describe what it is necessary for you to know, if you wish to be able and useful midwives, in the following order.

(1) What is pregnancy? How it occurs. The growth of the foetus (or baby) in the womb. How to tell when a woman is pregnant.

(2) How a baby is born. This will include a description of the bony canal through which the baby has to pass; a description of the power that forces the baby out, the soft parts passed, and the Three Stages of Labour.

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(3) The adaptation or fitting of the baby to the bony canal (pelvic canal) through which it has to pass. This adaptation is known as the Mechanism of Labour.

(4) The attention of the midwife to herself. This includes an account of her instruments and other apparatus, her bag, her nursing dress, the need of cleanliness, antiseptics, and how to clean herself and her kit after she has attended a case.

(5) The attention of the midwife to the mother and her surroundings. This includes an account of the way of insuring that a house is healthy, a room clean and well ventilated; a description of the general principles of healthy living (known under the term of hygiene) and the advice that should be given to a pregnant patient.

(6) A full account of the conduction of normal labour.

(7) The conduction of the normal lying-in period.

(8) The abnormalities of pregnancy, viewed mainly from the practical point as to what the midwife really must know, but extended to points that will interest her in midwifery and enable her to understand the doctor's treatment.

(9) The abnormalities of labour on the same principles with full accounts of the conduction of breech delivery, the treatment of post-partum hæmorrhage and other practical matters, which a midwife must know thoroughly.

(10) The abnormalities of the lying-in period.

(11) The insanities of the reproductive period.

(12) The baby, treated fully, for the more nurses know about babies the better.

In this way we shall cover all the subjects needed for the Rotunda Certificate, or for the examinations of the Central Midwives Board, and I hope to enable you to get a grasp of the subject that will make you careful, cleanly and judicious nurses and midwives.

CHAPTER II

THE CONDITION OF PREGNANCY

What is Conception ?—You are probably reminded by the word conception of the Biblical phrase “She conceived and bare a child.” It is necessary that you should understand how conception occurs, for it helps you to understand the anatomy and arrangement of the womb and other sexual organs of the woman.

Except in the very lowest forms of life, a new individual is always created by the union of a male with a female element. Both these elements are so small that they can only be seen by means of a microscope. Again, it is a law of nature that the male element moves to and finds the female element. For example, in the vegetable world the pollen or male element is carried to the ovum or female element either on the bodies of insects or by the wind. The pollen, for instance, of pine trees, which forms the fine yellow dust you see in the spring in pine woods, has two little bladders so that it can be blown by the wind towards other pine trees and reach the ovum or female element on the small flowers of these other pine trees. When it has reached it, the male element joins with the ovum, and the ovum is said to be fertilized and becomes a seed, which, properly nourished and under suitable conditions, will grow into a new pine tree.

In human beings the same sort of thing happens. The male elements, or spermatozoa, as the result of cohabitation, pass from the testis down the tube of the male organ into the vagina of the female. They are able to move by a long tail which each possesses, which is used for move-

ment much as a tadpole uses its tail. A spermatozoon in this way meets an ovum or female element, the two join and become a fertilized egg or seed, which grows into a baby, provided the wall of the womb on which the seed is planted and other general conditions are favourable.

THE OVARIES, FALLOPIAN TUBES, UTERUS AND VAGINA

To understand conception and pregnancy better, you must understand the female organs which are made for con-

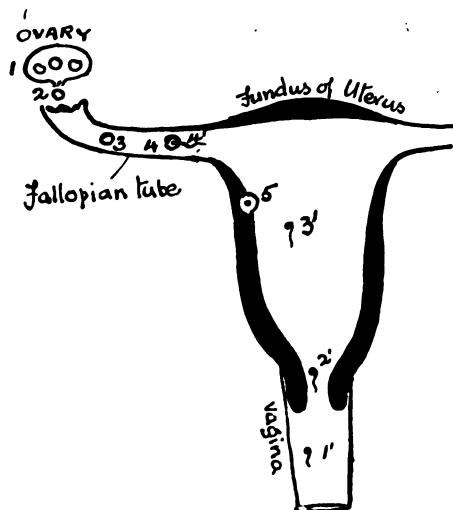


FIG. 1.—Diagram to show process of fertilization and conception.

ception and child-bearing. These organs all lie in a woman's pelvis, and are protected by the strong pelvic bones.

The Ovary.—The first organs with which we are concerned are the ovaries, for there are two, one on the left of the womb and the other on the right. The ovary is an oval body, whitish in colour and about the size of an almond

nut. As the testicles or male organs bear the male elements or spermatozoa, so the ovaries bear the female elements or ova (*ovum*—Latin for egg). In the diagram at 1 you see the ova lying in the ovary. At 2 you see one ovum has burst from the ovary and is falling into a trumpet-shaped cup. This is exactly what happens in a woman. It usually happens just at the end of a menstrual period, which is

the time when the woman is unwell. An egg or ovum, when ripe, bursts through the thin outer membrane that covers the ovary and falls into the trumpet-like cup, which is the mouth of a tube leading to the uterus or womb.

The Fallopian Tube.—This tube is called the Fallopian tube—called Fallopian because it was first described by an Italian anatomist called Falloppius. There are two tubes, one on each side. They are 4 ins. long and about as thick as a penholder. The next thing that the egg or ovum has to do is to reach the womb or uterus. It is not like the male element, which can move of itself. The ovum has no power of movement. So in order that it can reach the uterus, the Fallopian tube is lined with microscopic hairs which are constantly waving in the direction of the uterus. Under the microscope they look like reeds along a river bank bending to the wind. By their means the ovum is wafted into the uterus. At 3 in the diagram you see it in the Tube.

The Uterus (*uterus*—Latin for the womb).—The uterus, or womb, is a pear-shaped, muscular organ in which the baby lives and grows until birth. The virgin uterus is 3 ins. long and 2 ins. broad and 1 in. thick. There are several terms connected with the uterus which you must know, for they are constantly used in midwifery.

THE BODY.—The picture shows the body of the uterus. It is the most muscular part of the uterus. Its upper part is known as the fundus. The body forms the upper two-thirds of the uterus.

THE CERVIX (*Cervix*—Latin for neck).—The lower third of the uterus is known as the cervix or neck. The cervix projects into the vagina.

THE CERVICAL CANAL.—The cervical canal passes from the cavity of the uterus to the vagina. Its opening into the vagina is known as the external os (*os*—Latin for mouth), its opening into the uterus the internal os. These internal and external mouths of the canal are very definite and must be carefully remembered. The internal os is surrounded by circular bands of muscle which keep it

closed. The muscle is called a sphincter (*sphingein*—Greek to bind tight), and acts in the same way as the sphincter ani which keeps the back passage closed. The external os is closed by circular bands of muscle and fibrous tissue. Fibrous tissue consists of woven fibres which cannot contract like muscle. (*Tissue*—French for woven, hence fibres—woven fibres.) The two mouths and the canal are closed during pregnancy. They do not expand and widen, as does the body of the uterus, with the growth of the ovum, nor do they open until labour or childbirth sets in. The spermatozoon is so tiny that it easily passes through the closed canal, but the fertilized ovum gets big so rapidly that it cannot pass without the canal opening to allow it to do so.

LIGAMENTS.—The uterus is supported by ligaments, and two of these you should know, namely the round ligaments which pass to either top corner of the uterus.

Vagina (*vagina*—Latin a sheath).—The vagina is the front passage. Into its roof the cervix and external os project. It is 3 ins. long and opens between the thighs at the vulva.

THE FORNICES.—The cervix projects into the vagina. The vaginal vault that surrounds the cervix is divided into four fornices (*fornix*—Latin an arch), an anterior, a posterior and two lateral fornices.

Practical Application of these Anatomical Points.—Returning to Fig. 1, on p. 6, you can now trace the whole history of conception.

The ovum breaks from the ovary (1), falls into the trumpet-like mouth of the Fallopian tube (2), is wafted along the tube (3). The spermatozoon passes into the vagina 1¹, then through the cervical canal 2¹, into the womb 3¹. The ovum and spermatozoon meet at 4 4¹ and the ovum becomes fertilized and the woman conceives. This meeting sometimes occurs not in the cavity of the uterus, but in the tube.

GROWTH OF THE OVUM

The ovum is now fertilized; it is capable of growing under favourable conditions from the size of a pin's point to form the full-term baby and the afterbirth.

The Length of Pregnancy.—From conception to child-birth is on average 280 days or forty weeks or ten lunar-months.

Nourishment and Excretion of the Ovum.—We next have to consider the way the ovum receives food during its growth, and the way in which it gets rid of the waste products of its life.

The Decidua.—The uterus is lined with a membrane called a mucous membrane, which is like the membrane that lines the mouth, nose and other cavities. This membrane becomes thicker and more spongy when the woman is pregnant. It is then called the decidua. The ovum, when fertilized, becomes buried in the decidua as is shown at 5 in the diagram on p. 6. It is actually buried in the decidua and covered over by it, as a seed is buried in the soil. The decidua are so called from the Latin *deciduus*, meaning falling, not lasting through the year.

The Chorion (Greek *chorein*, to contain).—The next question to answer is how is the ovum to get food from the decidua and get rid of waste products? This it does by means of the chorion.

The fertilized egg grows rapidly and divides into many different cells. Two membranes are formed which surround the foetus (*foetus*—Latin fruit) and enclose the waters. The outer one is called the chorion, the inner the amnion.

The chorion then being the outer layer lies next to the spongy decidua. From it grow little soft branching filaments, the chorionic villi (*villus*—Latin for a shaggy hair), which burrow into the decidua like little roots. In each villus are blood-vessels, and the blood-vessels of the villus come into close contact with the blood that makes the decidua spongy.

Some of you may know what water culture of plants is. You take a young plant and let its rootlets dip into

a bottle containing certain dissolved substances necessary to the plant's life. The rootlets take these substances from the water and so the plant is fed, flourishes and grows.

Much the same thing happens to the ovum. The chorionic villi dip and burrow into the spongy decidua and take from the mother's blood, that soaks and circulates through the decidua, the dissolved substances needed for the life of the embryo. They also give up to the decidual blood the waste substances of the fœtus.

For the first three lunar-months of pregnancy the

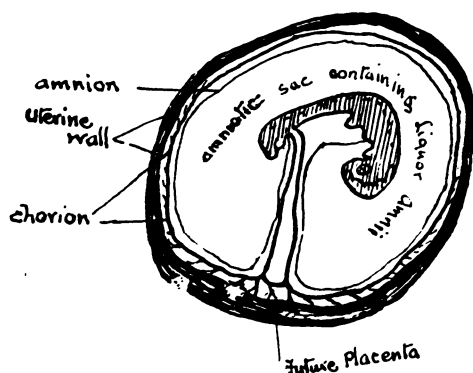


FIG. 2.—Diagram of the early ovum.

greater part of the ovum is covered with these chorionic villi.

The Placenta (*Plakoros*—Greek, a flat cake).—After the third month, most of the chorionic villi wither and disappear. Over a limited area, however, they continue to grow vigorously and form the placenta.

The placenta then is an organ composed of (1) chorionic villi; (2) maternal decidua.

The spongy decidua becomes honeycombed with large spaces and channels full of blood, the so-called venous sinuses (*sinus*—Latin, a bay, a gulf). Into these channels the wavy tufts of the chorionic villi with their blood-vessels dip, very much as the rootlets of the plant dip

into the water in the water culture of plants already mentioned.

In this way through the placenta the foetus, as the child in the womb is called after the third lunar-month, gets oxygen and nourishment from the mother's blood and gives up its waste products. The heart of the foetus pumps the foetal blood along the two arteries of the umbilical cord to the placenta. This blood returns from the placenta to the foetal circulation by the umbilical veins which run in the umbilical cord.

The description of the placenta will be left until we

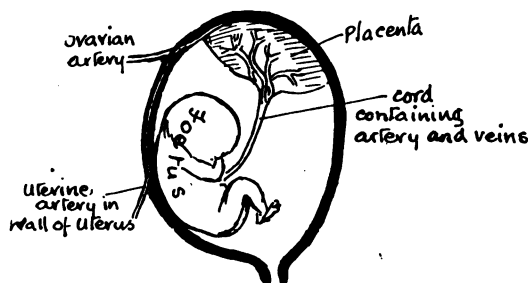


FIG. 3.—Diagram of foetus and placenta.

consider the examination of the afterbirth in the conduction of normal labour.

Amnion (*Amnion*—Greek, a bowl in which the blood of sacrificial victims was caught).—On p. 9, we said that two membranes are formed which surround the foetus: the outer the chorion, and the inner the amnion. We have seen that the chorion is the membrane that feeds the embryo. (*Embruon*—Greek, the fruit of the womb in the first three months.) What is the object of the amnion? The growing embryo is very soft and delicate and could be readily injured were it squeezed by the uterus in which it lies. Now as a matter of fact the uterus does get smaller or contract and then relax again about once every twenty minutes during pregnancy. To prevent the foetus being injured, it is surrounded by water, and this water is known as the **LIQUOR AMNII**. The

embryo or fœtus floats in the liquor amnii and no better means of guarding the delicate life against injury could be imagined. The liquor amnii itself is enclosed by the amnion (*see* diagram, p. 10). The amnion lines the inner surface of the chorion. The two together are known as the MEMBRANES, and with the liquor amnii they are known as the BAG OF WATERS.

We have now seen how conception takes place, how the female sexual organs are adapted for this ; how the ovum grows, how it gets nourishment, how it gets rid of its waste products, and how it is protected from injury by the liquor amnii.

DEFINITION OF PRINCIPAL TERMS USED

CONCEPTION.—The union of male and female elements ; also called fertilization.

SPERMATOZOON.—The male element.

OVUM.—The egg or female element.

OVARIES.—The organs which contain the ova.

THE FALLOPIAN TUBES.—The tubes into the trumpet mouths of which the ova drop and along which they pass to the womb.

FERTILIZED OVUM.—The ovum which, owing to union with a spermatozoon, is capable of growth. It grows from the tiny egg to the full-term baby ; the placenta and membranes, for all these, except the maternal sinuses of the placenta, are developed from the ovum and therefore collectively are still called the ovum.

THE UTERUS.—The organ in which the fertilized ovum is nourished.

THE BODY OF THE UTERUS.—The upper two-thirds of the uterus, which expands and grows to allow of the growth of the fertilized ovum.

THE NECK OF THE UTERUS.—The lower one-third of the uterus, which does not grow or expand. Its canal, the cervical canal, keeps closed until childbirth.

INTERNAL OS.—The mouth of the cervical canal that opens into the uterine cavity. It is kept closed during

pregnancy by a circular band of muscle known as a sphincter.

EXTERNAL OS.—The mouth of the cervical canal that opens into the vagina. It is kept closed during pregnancy mainly by fibrous tissue.

THE VAGINA is the front passage which opens externally at the vulva.

THE DECIDUA is the mucous membrane which lines the cavity of the pregnant uterus. It is thick and spongy up to the end of the third lunar-month of pregnancy. The placenta then forms, the rest of the chorionic villi wither, and the decidua in which they burrowed withers also.

THE FŒTUS.—The child within the womb is known as the foetus. It is usually called the embryo for the first three lunar-months of pregnancy.

THE CHORION is the outer membrane of the two foetal membranes.

THE CHORIONIC VILLI are the soft branching filaments which grow from the chorion and burrow into the decidua.

THE PLACENTA.—Most of the chorionic villi wither away. Over a special area they persist and grow. These growing villi and the area of decidua in which they grow form the placenta. The placenta is formed at the end of the third lunar month.

THE AMNION is the inner of the two foetal membranes. It secretes fluid, the liquor amnii, in which the foetus floats and by which it is protected from injury.

THE BAG OF WATERS.—The liquor amnii surrounded by the amnion and chorion, which are in close contact, and known as the membranes. They and the liquor amnii they enclose are known as the bag of waters.

CHAPTER III

DIAGNOSIS OF PREGNANCY

Importance.—When a Nurse can, on her own Responsibility, tell a Patient she is Pregnant and when not.—The next question we have to consider is how a nurse can tell when a woman is carrying a child or not. In most cases the discovery of pregnancy is not very important, and therefore a nurse can let the woman know whether she is or is not pregnant. If the discovery, or diagnosis, as it is called by medical men, is of any importance, as when the woman is not married and her chastity is questioned, it should be left to a medical man. A nurse must not take this responsibility.

Division of Pregnancy into Periods.—Pregnancy exists for about ten lunar-months. Practically in the first five lunar-months you may from your examination think it very likely the woman is pregnant ; in the second five months, that is from the beginning of the sixth month to childbirth the foetus frequently gives signs of its presence in the womb, and if you detect any of these, you can be sure the woman is pregnant. I shall, therefore, describe to you the signs of pregnancy you may discover in the first five months, and the signs you may discover in the second five months of pregnancy.

SIGNS BY WHICH YOU MAY DIAGNOSE PREGNANCY IN THE FIRST FIVE LUNAR-MONTHS OF PREGNANCY

Cessation of Menses.—A pregnant woman is not unwell every month. Her menses or monthly periods cease. This is practically invariable, and any blood that runs from

the vagina during pregnancy must be looked upon as unnatural.

There are many conditions other than pregnancy which cause the cessation of the monthly periods, such as anæmia, consumption, etc., yet in spite of these exceptions, when a woman who enjoys good health, and is unwell regularly every month, misses her period, the strong probability is that she is pregnant.

Morning Sickness.—Morning sickness is either actual

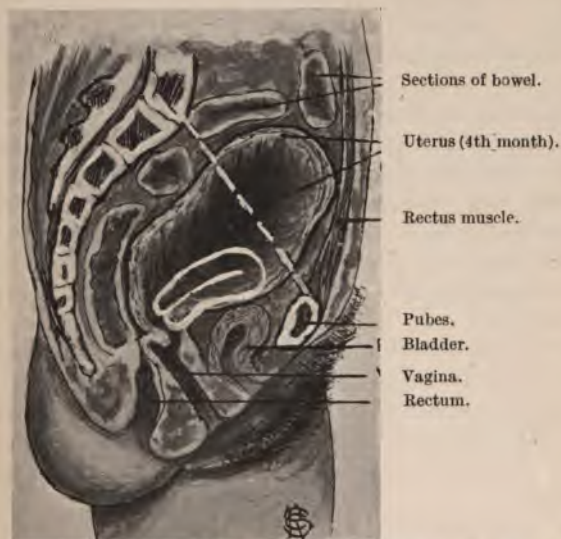


FIG. 4.—The general relations of the pelvic organs. Below the white line is the pelvis, above it the abdominal cavity. The position of the unimpregnated uterus is shown in white.

sickness or a feeling of sickness, which a pregnant woman has when she first gets up in the morning. It is far more common in women who are carrying their first child, in primiparæ in medical language, than in women who have borne one or more children, the so-called multiparæ (*primus*—Lat. first, *multus*—Lat. many, *parere*—Lat. to bring forth children). It begins about the sixth week of pregnancy and usually ceases about the end of the fourth lunar-month.

Frequent Micturition.—Relations of Womb and Vagina to Bladder and Urethra.—The bladder lies just in front of the uterus, the channel from the bladder to the outside, called the urethra (*ouruthra*—Gr. passage for urine), lies in front of the channel from the uterus to the outside, namely the vagina, and the mouth of the urethra lies in front of the vulva.

It is scarcely surprising then that whilst the growing uterus is in close relation to the bladder its growth should disturb its neighbour. Consequently when the woman is pregnant she passes her water more frequently than she usually does. After the end of the third lunar-month the uterus rises by its growth out of the pelvis into the abdomen, whereas the bladder stays in the pelvis. Consequently the growing uterus no longer presses on the bladder and the frequent passing of urine ceases.

Blueing and Increased Moisture of the Vulva and Vagina.—In describing the nutrition of the ovum you were told that the decidua was spongy and full of blood. Now blood is the nourishing fluid of the body. The womb in pregnancy has to grow very fast. In ten months it actually gets about twenty-five times as big as it was. Naturally such extraordinarily rapid growth as this requires a greatly increased quantity of blood which makes the body and cervix soft. Now the walls of the vagina partake in this flush of blood. They increase in thickness and are much more full of blood.

The consequence of all this is, that the vulva and vagina become violet or blue and the veins become so full of blood that when you look you see them standing out. They are also twisted and knotted, or in medical language varicose. You have only to twist a handkerchief tightly round your wrist to understand this. The veins stand out and many veins appear that you cannot see before. They look like knotted cords and the blood that fills them makes them look blue.

This blueing of the vulva and vagina is often noticeable in the second month of pregnancy and gets more marked in the later months. After the fourth month, the colour is

often quite blue. To see it you should ask your patient to lie on her left side with her legs drawn up and gently separate the lips of the vulva.

I do not think you should do more than this. I do not think any of your examiners would expect you to make a vaginal examination, and so I will not describe what a doctor feels when he makes a vaginal examination.

Increase in Size in the Uterus.—The uterus increases in size very rapidly, but you cannot feel it for the first three lunar-months of pregnancy because it stays in the pelvis, which is surrounded by bony walls.

What is the pelvis? If you look at the diagram on p.15, which represents a woman cut in half down the middle so as to show her inside, you will see that a dotted line has been drawn from the top of a bone called the sacrum to the top of a bone called the pubes. Below this imaginary line the part down to the line joining the external openings of the back passage, the vulva, and the urethra, is called the pelvis. The part above this line up to the diaphragm is known as the abdomen or abdominal cavity. The diaphragm separates the abdomen from the chest.

For the first three months of pregnancy then, the uterus is surrounded by the bones that form the walls of the pelvis. But in the fourth lunar-month it grows up into the abdomen and you can usually feel it through the skin and muscle that form the abdominal wall. You feel it, in short, by pressing your hands into the lower part of the stomach, and it feels like a round lump rising just above the top of the pubic bone.

At the end of the fourth lunar-month the top of the womb reaches up to a height about half-way between the top of the pubic bone and the umbilicus (*umbilicus*—Lat. the navel). At the end of the fifth month you can feel it about two fingers' breadth below the umbilicus.

The Breasts.—The breasts are so intimately connected with the child that you will not be surprised to hear that changes are noticeable in them even in the early months of pregnancy. They get larger, the veins under the skin over them are fuller, like those on the back of your hand,

when you bind your wrist, and from the end of the second month you can as a rule squeeze a little fluid out of the nipples. This squeezing of fluid out of the nipple is a most valuable sign of pregnancy in women carrying their first child (*primiparæ*), but in women who have borne children (*multiparæ*) it is less certain, for you can often squeeze fluid out of their nipples, sometimes even though they have not recently been suckling a child.

The area of dark skin, known as the primary areola (*areola*—Latin for a little area), which normally surrounds the nipple becomes darker and studded with little warts or tubercles called Montgomery's follicles. You would think that these changes in the breast could only occur with pregnancy, but as a matter of fact they can accompany tumours and diseases of the child-bearing organs and occur sometimes when an hysterical woman thinks she is going to have a child.

Quickening.—Quickening is the first feeling of the movement of the child in the womb. It is felt usually about the eighteenth to twentieth week of pregnancy. The sign is more reliable in women who have borne children and felt quickening before than in women carrying children for the first time and to whom therefore the sensation is new. A woman may mistake flatulence and other internal movements for quickening.

Significance of Signs that Occur before the End of the Fifth Lunar-month of Pregnancy.—None of these signs are certain signs of pregnancy. With this caution, however, you are scarcely likely to be wrong if you tell a married woman that she is going to have a child :

(1) if she has missed one or more periods, although in good health and previously regular ;

(2) if with this cessation of menses, she is sick or feels sick when she gets up in the morning (up to the end of the fourth lunar-month) ;

(3) if with cessation of menses and morning sickness she has frequent micturition for the first three months of the pregnancy ;

(4) if with cessation of menses and with or without

morning sickness, she tells you her breasts are bigger and you squeeze a little fluid out of the nipples. Remember, however, if she has recently been suckling a child this is of no value, and, if she has had a child before, it is of less value than in a woman carrying her first child ;

(5) if with cessation of menses for four months she tells you her stomach is getting bigger and on examination you find that this is so ;

(6) if with cessation of menses for three to four months, you examine the vulva and lower part of the vagina and notice they look blue and show knotted veins.

SIGNS FROM THE BEGINNING OF THE SIXTH LUNAR-MONTH TO THE END OF THE PREGNANCY

At the sixth month the foetus is twelve inches long and is big enough and well developed enough to give signs of its presence. Of course, signs given by the foetus must be certain signs of pregnancy, and any uncertainty will come from your inexperience and the difficulty nurses have in making out the signs, compared to doctors, who are by practice skilled in examination of patients.

Signs Certainly Due to Pregnancy.—The three certain signs given by the foetus are : (1) the sound of the foetal heart ; (2) foetal movements ; (3) foetal parts are felt.

The patient must be in bed for you to examine her.

The Foetal Heart.—To hear the foetal heart you should apply your ear directly to the woman's abdomen and listen over the big uterus that makes the abdomen bulge. Move your ear all over the surface of the bulging uterus, until you hear the heart beat best. Nurses during their training should take all the opportunities they can to listen to the foetal heart. With practice you can nearly always hear it, but it is not easy to hear it as early as the sixth lunar-month, for the foetus is still very small, and consequently its heart gives rather a feeble beat. But the nearer the foetus approaches to full term, the stronger is its heart and the more easily you can hear it.

What you hear is a rapid and faint tic-tac sound like the

tic of a watch smothered under a pillow. If you count it, you will find the heart beats much more quickly than does your own. If you count your own pulse you will find it is probably between seventy and eighty, but if you count the foetal heart you will find it beats between 120 and 160 times per minute, in fact, so fast that it is difficult to count. Sometimes by putting your ear to the abdomen, you hear the mother's heart-beats. If you take her pulse at the wrist whilst you are listening, you will find the two beats occur the same number of times, whereas the foetal heart-beat will be quite different in rhythm, and almost certainly much faster, and so you can distinguish it.

FUNIC SOUFFLE.—Perhaps when you are listening for the foetal heart you will hear a blowing sound like the rapid puff of a distant engine. You remember the foetal blood is pumped along the umbilical vessels to the placenta. Sometimes as the blood passes, its passage makes this blowing sound, which is known as the *umbilical souffle*, or *funic souffle*, the *funic* (*funis*—Latin, a cord) being another name for the umbilical cord. The sound, therefore, occurs at the same time as the sound of the foetal heart-beat, that is, between 120 and 160 times in the minute.

OTHER SOUNDS.—Other sounds that you may hear when you have your ear to the abdomen are the gurgling of gas in the bowels, a sharp tap caused by the foetus kicking against the wall of the uterus, or the uterine souffle, with which we deal later.

The Movements of the Foetus.—When you are watching the abdomen you can sometimes see a limb of the child move. What you see is a wavy motion usually at the fundus or upper part of the uterus. If your hand is laid on the uterus you will often feel the movement of the foetus quite distinctly. Sometimes the mother feels the movement at the same time.

Foetal Parts.—A more thorough account of how to feel for the various parts of the foetus will be given in the chapter of the conduction of normal labour.

When you want to feel or palpate the foetal parts you should lay the palms of your hands flat on the prominent

belly of the woman and dip down gently with the pads of your fingers. In this way you will be able to feel the knobs of the child's limbs, or the breech or head, and then you will be sure that the woman is pregnant and that her big abdomen is not due to wind, fat, or some tumour. Occasionally you can feel the child so easily that you can push it about, or by pressing down suddenly on one side of the uterus, you feel the child float up suddenly on the other. This movement of the child as a whole is called external ballottement, this being the French word for tossing.

Signs Most Probably Due to Pregnancy.—IMPORTANCE. You now know the three certain signs of pregnancy, and if they were quite easy to get there would be no need to bother further about the diagnosis of pregnancy. They are sometimes difficult to obtain, therefore there are a few other signs you should know. These signs are not absolutely certain signs of pregnancy, for in rare instances they have been known to occur with large uterine tumours, but when combined with a definite history of amenorrhœa and quickening, you are very unlikely to be wrong in diagnosing pregnancy on the strength of them, unless your patient wilfully misleads you.

Uterine Souffle.—This blowing sound or souffle is made by the passage of the blood, which is pumped with each maternal heart-beat through the uterine sinuses. When you put your ear to the uterus you hear the puff, puff sound at the same rate as you feel the mother's pulse.

Intermittent Contraction of the Uterus.—When you lay your hand on the uterus, you may sometimes feel the uterus harden under your hand. Then it relaxes again. The pregnant uterus, in fact, contracts and relaxes every twenty minutes or so throughout pregnancy, and if you feel it, it is a probable sign of pregnancy.

Secondary Areola.—We spoke on p. 18 of the dark primary areola of the breast. From the sixth month of pregnancy onwards, besides their increase in size, you can sometimes see another ring of dappled pigmentation round the primary areola. It is best seen in brunettes, in whom

pigmentation of the face is not uncommon at the later period of pregnancy.

Lastly we take the size of the uterus and the effect on the body of its large size.

The Increasing Size of the Uterus.—The height of the fundus of the uterus is really better as a guide to the duration of pregnancy, than as an actual sign of pregnancy itself.

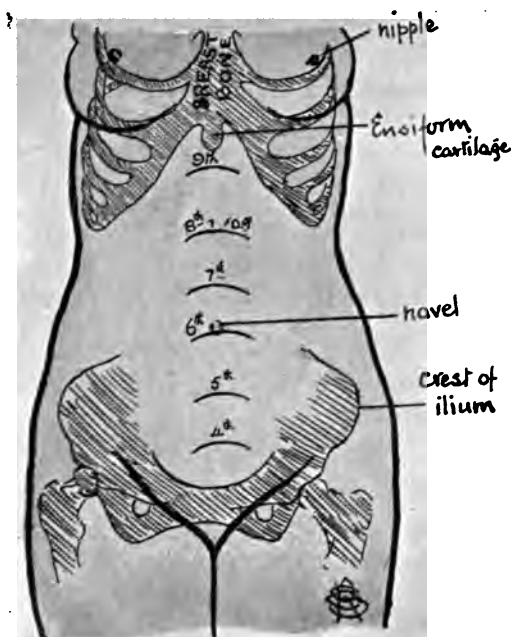


FIG. 5.—Height of the uterus at the different months of pregnancy.

We will tabulate its size at the different lunar-months :—

At the end of the third month the fundus is level with the top of the pubic bone.

At the end of the fourth month the fundus is one-third of the way between the pubic bone and umbilicus.

At the end of the fifth month the fundus is two-thirds of the way between the pubic bone and umbilicus.

At the end of the sixth month the fundus is at the umbilicus.

At the end of the seventh month the fundus is three fingers' breadth above the navel.

At the end of the eighth month the fundus is half-way between the umbilicus and the top of the ensiform cartilage.

At the end of the ninth month the fundus is up to the tip of the ensiform cartilage, at the lowest part of the breast bone.

At the end of the tenth month the fundus has sunk to half-way between the umbilicus and the ensiform cartilage.

This increasing size of the uterus makes the abdomen larger and larger. Up to the fifth month not much is noticed, unless the patient is stripped, but from the sixth month onwards the alteration in figure becomes noticeable. The umbilicus, which as you know normally forms a little pit, becomes flattened, and eventually may be protruded. The skin over the enlarged abdomen shows little pink bands, which after pregnancy become white ; these are known as the *striæ gravidarum* (*gravida*—Latin for a pregnant woman). Again you will notice a line of pigment down the centre of the abdomen as well as a general darkening of the skin, if the patient is a brunette.

The large size of the uterus also may lead to various other annoyances. It presses on the patient's stomach and gives her indigestion, on her bowels and gives her constipation, on her diaphragm and makes her breathless, on her abdominal veins, giving her piles and varicose veins of the legs.

Significance of the Later Signs of Pregnancy.—

1. Fœtal heart or funic souffle.
2. Fœtal movements.
3. Fœtal parts.

These are certain signs, and therefore they alone tell you the woman is pregnant.

The other signs are probable signs and you should attach the following importance to them :—

- (1) If you find an abdominal swelling or tumour which feels like the uterus and over this you hear a souffle

with each maternal heart-beat, if the patient has missed five or more periods, and if the breasts are large, you can be almost sure that the patient is pregnant.

- (2) Similarly, if you find this tumour hardens and then gets softer whilst you are feeling it and you get a history of missed periods, and you find large breasts, your patient is very probably pregnant.
- (3) The secondary areola, if you see it, is strong evidence of pregnancy, if the history of pregnancy and size of the uterus correspond.

PREDICTION OF THE DATE OF LABOUR

There are three ways in which you can predict more or less accurately when the child will be born ; (1) from the cessation of the menses ; (2) from quickening ; (3) from the height of the uterus.

(1) **From the Cessation of the Menses.**—Take the last day of the last monthly period, count three months back and add seven days. For example, if the patient was last unwell from September 3 to September 8, 1906, counting back three months from September 8, makes June 8, adding seven days makes June 15, 1907, the probable date of delivery, pregnancy lasting for 280 days. As a matter of fact, the exact length of pregnancy varies, but it is very unlikely that this date will be more than a week before or a week after the actual date of labour, and this is about as accurate as prophecy can be.

(2) **From Quickening.**—Quickening occurs about the eighteenth or twentieth week. Pregnancy lasts on average forty weeks. Therefore, you add between twenty and twenty-two weeks to the date of quickening. As you see, this is not so accurate as the first method, but you should see whether the date calculated from quickening corresponds to that from the cessation of the menses.

(3) **From the Height of the Uterus.**—On p. 22 is a diagram and table showing you the height of the uterus at the different months. This is the method you should rely on,

if you can, for it does not depend on the patient's memory, which may be faulty.

Falling Downwards and Forwards of the Uterus.—About three weeks before labour in a primipara, and three days

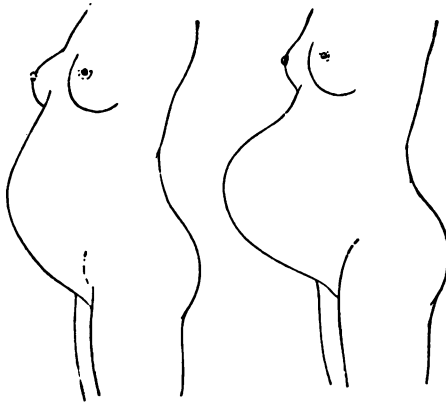


FIG. 6.

The uterus before it
has fallen downwards
and forwards.

The uterus after it
has fallen downwards
and forwards

before labour in a multipara the uterus falls downwards and forwards (see Fig. 6), so that you can lay your palm on the fundus as if on a shelf. The patient may also say that she breathes more easily, but has pain in her legs. This falling is sometimes a guide to the time when labour may be expected.

CHAPTER IV

HYGIENE—ADVICE TO THE PREGNANT WOMAN

What is Hygiene?—Hygiene is from the Greek word *hygienos*, meaning, “good for the health,” and it is the science that deals with the laws of health in a more general sense. The Midwives Board rightly require that you shall understand “the principles of hygiene as regards the home, food supply and person,” in order that you may give sound advice to your patients. Hygiene includes: (1) water; (2) sanitation; (3) ventilation and fresh air; (4) warming and lighting; (5) exercise and clothing; (6) food.

I will consider all these briefly, telling you the arrangements that are best for the health. Over many homes and women you have no real control before labour; all you want to know is, what conditions are good, what not good, and your experience and tact will tell you whether you are able to alter conditions that you do not think are favourable to health, while your knowledge of hygiene will make your advice sound, when you have the opportunity to offer it.

(1) **Water.**—Drinking water should be taken from a tap in the main supply pipe. The reason of this is that it is fresher and purer than water that has stood in cisterns or in patent filters.

The daily bath is good for health and you should recommend it to your patient.

(2) **Sanitation.** **Disposal of refuse.**—The proper disposal of excreta and refuse is superintended by sanitary officers.

All your duty consists in is to try to discover the cause of any disagreeable smell. If the w.c. smells, it is possible there is not sufficient flush of water, or the pipes leak, or there is something wrong with what is called the trap, which shuts off the w.c. from the big iron drain pipe that runs down the side of a house and is known as the soil pipe. Whichever it is you must see that the matter is put right, for such bad smells affect the health of the inhabitants, giving them sore throats and headaches, and are especially bad for the pregnant or lying-in woman. The best w.c. has an earthenware closet, a movable seat, and a separate cistern in the w.c. It must always have a window in the outside wall of the house, which is to be kept open.

Dustbins are nowadays mostly made of galvanized iron and are under the charge of the sanitary authorities. In the summer they may get offensive, if things that can go bad, such as old vegetables, potato parings and remains of meat, are thrown into them. Refuse of this nature should be burnt on the kitchen fire and not thrown into the dustbin.

(3) **Ventilation and Fresh Air.**—We now come to a condition of health in which your advice is of great value, namely, on the need of fresh air. Fortunately the value of fresh air is becoming so generally known that there is not much need to point out its advantages. Our curiosity is rather aroused as to how doctors in the past got the notion that fresh air was bad for patients and children, and kept them in hot, stuffy rooms.

A room is not properly ventilated if when you go into it you notice a stuffy smell. If you are sitting in the room you will not notice it yourself, but some visitor will. The air is made stuffy and impure by the respiration of human beings, by candles, lamps or gas, and by decomposing scraps of food you sometimes find in the rooms of the poor. The fact that artificial lighting, except electric light, vitiates the air shows you the particular need of good ventilation in the evening. You are all aware how stuffy a well-filled drawing-room gets on a winter's evening,

with the windows closed and heavily curtained and the room brightly lit. You get sleepy and yawn, or you get a headache and feel weary. You go early to bed to a room with the window closed and curtained and no fire burning to help ventilation. You sleep long and heavily and you wake feeling tired and stupid, with no appetite and a headache. All this is due to your not having had enough fresh air. A continuance of this lack of fresh air makes a woman lose energy, lose her appetite, become subject to headaches, get sore throats and become anæmic, a condition of health the opposite of what you wish in a woman, who is about to become a mother.

Therefore it is of great importance that you should recommend your patients plenty of fresh air, and to make your advice of practical value, you must know something about ventilation. I may add, too, that your own health will suffer if you allow the patient's room, in which you sit, to be badly ventilated.

VENTILATION.—The principle upon which ventilation depends is that hot air is lighter than cold. It is precisely the same that causes the world's ventilation by winds. The hot air rises, and cold air flows in to take its place. The air breathed out with expiration, the air arising from gas or lamp flame, even the air of putrefaction is warm air and is lighter than unused air in cool countries, and therefore the foul air rises to the top of a room, until it is cool, when it will sink and mix with the air of the rest of the room.

If the top of the window is opened, the warm foul air will rise out of it and escape. Cooler air flows into the room to take its place. This may come through the door, in which case it is house air and not fresh air. If the window is also opened at the bottom, fresh air will take the place of the foul air. If there is a draught, the inlet may be too small, so try opening the window a little wider. This then is the chief principle of ventilation, to have a high outlet for foul air and a low inlet for fresh air. This you can well manage in temperate weather by having

the window open a certain amount both at the top and bottom.

In cold weather a fire in the room makes an admirable outlet for foul air, the draught up the chimney sucking the air out of the room. But, as before, you must have an inlet of fresh air, and this you can get by opening the window. If opening the window makes the room too cold, raise the bottom sash and put a board under it. Air then enters without draught, as you see in the figures.

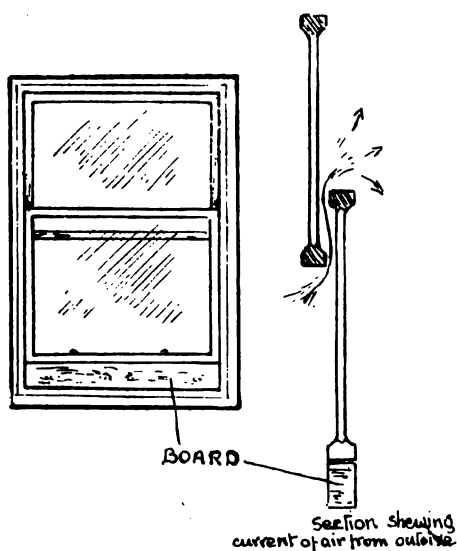


FIG. 7.—Use of board to open window.

The amount of necessary fresh air allowed to an adult by public health specialists is 3,000 cubic feet per hour, that is to say, the amount of air that would fill a room 30 ft. long by 10 ft. broad by 10 ft. high. The rooms of your more wealthy patients will be as big as this ; but whatever size the room is, recommend that the windows should be kept open both night and day, so that the air is constantly changed.

(4) **Warming and Lighting.**—An open fire is the healthiest

method of warming a room artificially, because of the excellent ventilation it affords as well as heat. Other methods are stoves and hot-water pipes, which have the disadvantage of making the air dry. A dish of water should be placed near a stove, for the water evaporates and keeps the atmosphere moist. A convenient temperature is 60° F., a temperature you can tell roughly by the fact that the room feels neither too hot nor too cold. Artificial lighting is effected by electric, gas or lamp light. Of these, electric light is the healthiest. Incandescent is healthier than the naked gas flame.

Abundant daylight is essential to a healthy household. Air, light and sunlight are all purifiers of the world. Light, especially sunlight, directly kills microbes, air makes the minute putrefying matter that constantly floats in inhabited rooms innocuous. So then have big windows, plenty of light, sunlight if possible, for which the room should face south-west, and plenty of fresh air. Good health will be the reward.

(5) **Exercise and Clothing.**—Exercise is essential to good health, and a pregnant woman must not cease from taking plenty of exercise. Some sensitive women hide from public gaze. Some go to the country whilst carrying their baby, and this is very wise, for the country is healthier and quieter than the town.

Clothing is usually managed by the patient. None of it should be tight, and corsets should be laid aside during pregnancy. Corsets press on the swelling womb below and the swelling breasts above.

(6) **Food.**—The care of the public food supply is under the sanitary authorities. A cool, dry larder is the only house precaution.

What is she to eat, the pregnant woman will ask you? Answer her that she can eat anything she can digest, but only at meal times. Do not let her destroy her natural appetite by drinking milk between meals. She is apt to eat too much, under the idea of keeping her strength up. Never recommend her alcohol in any form. It is quite outside the province of a nurse to recommend

a patient alcohol, and she would deserve a severe censure if she did so.

Summary of Advice to a Pregnant Woman.—Let the nurse see that the drains of the house and dustbin do not cause smells, and, if they do, tell the patient or her husband to inform the sanitary authority, or tell her you will inform him.

Let the woman take plenty of fresh air, and always have her rooms and house well ventilated and well lighted. A coal fire is the best means of warming, and either electric or incandescent for lighting, her rooms.

Recommend her to take plenty of exercise, and advise her to give up corsets.

For food she can take what she likes at meal time, provided she does not have indigestion.

For drink, you must never recommend alcohol. Abundant tap water, three pints a day, is excellent for her. It will save her headaches and keep her body constantly washed free of impurities that tend to collect during pregnancy.

Let her have a daily bath.

Finally, let her have her bowels open at least once a day. Medicines you can recommend her are Apenta water, Eno's Fruit Salt, effervescing magnesia, cascara sagrada, or Burroughs & Wellcome's vegetable laxative tabloids.

For care of the nipples during the later period of pregnancy, *see* p. 257.

Caution to Nurses.—Nurses are thought by their patients to understand a great deal more about medical and sexual matters than they possibly can. Your patients will ask you various questions about medicines, management of their private health, their relations to their husband, and other matters of a sexual nature.

Many nurses, especially married nurses, feel bound to reply on these matters, and, so as to give information, they either draw on their imagination or from personal experience. *Personal experience must never be used as a basis for advice to a patient.* The partial information,

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which is all you can give, is almost sure to be harmful, imaginative information, positively dangerous, and may lead to your patient's adopting measures which may ruin her health, make her hysterical, or wreck the happiness of her marital relations.

I cannot warn you sufficiently earnestly never to discuss or give advice to your patients on these matters. You will do far greater damage than you imagine by so doing. To know that you *don't* know is one of the first principles of knowledge, and for a nurse to usurp the place of the medical man in these matters is quite unwarranted. Therefore, be wise and refuse to offer advice on these matters. Be tactful, too, in your discussion of the doctor with your patient, if a doctor has charge of her case.

CHAPTER V

LABOUR—THE EXPULSIVE FORCES AND THE PARTURIENT CANAL

What is Labour?—In Chapter II we considered the reproductive organs and their adaptation to the process of CONCEPTION and PREGNANCY. We have now to consider them in their function of expelling the full-term ovum from the mother to the outside world. This process is known as LABOUR.

The full-term ovum consists of : 1, the child or foetus ; 2, the liquor amnii in which the child floats ; 3, the membranes that enclose the liquor amnii ; and 4, the placenta. *Labour or childbirth may be defined as the process by which the expulsive forces expel the ovum through the parturient canal.*

The process of labour is a continuous one, but for the purposes of description it is divided into three stages.

IN THE FIRST STAGE the cervical canal, which is closed throughout pregnancy, is opened to allow the foetus to pass.

The membranes over the fully opened internal os, which would obstruct the passage of the foetus, should then break. The way is now clear for the passage of the foetus.

THE SECOND STAGE OF LABOUR is the passage and birth of the foetus.

THE THIRD STAGE OF LABOUR is the passage and birth of the afterbirth. The afterbirth is usually born about half an hour after the birth of the foetus. Labour or childbirth is then complete, and pregnancy terminated.

Scheme of Chapters V to VIII.—It is necessary for you to

know the process of labour in its details and varieties, both for examination purposes and because a proper understanding is of great practical use to you.

You probably have sometimes wondered how such a big thing as a baby could be born without serious damage to the mother. As a fact the fit of the fœtus to the parturient canal is always a close one and sometimes is so close or faulty that the child cannot be born naturally. It is with this fit or adaptation of the child to the parturient canal that these four chapters deal.

In the present chapter, I will deal with the expulsive forces and the parturient canal itself. In Chapter VI the fœtus will be described. In Chapter VII will be described the various adaptations of the fœtus to the opening or inlet of the parturient, before the passage of the fœtus has begun. These adaptations are known as the **POSITIONS** and **PRESENTATIONS** of the fœtus. In Chapter VIII will be described the various adaptations of the fœtus to the parturient canal during its passage. They are known as the **MECHANISMS OF LABOUR**.

The placenta and membranes are rolled up small and easily expelled. Consequently a description of the after-birth and the third stage of labour will not now be given but will be found in Chapter XIII.

Difficulty of the Subjects.—You are sure to find the processes of labour difficult to understand and to remember. All medical students thrash out the difficulties of presentations and mechanisms with the fœtal skull and pelvis, and you should use those given to your general sitting-room to master this essential knowledge.

THE EXPULSIVE FORCES AND THE PARTURIENT CANAL

The Expulsive Forces.—The chief force that opens the cervical canal and pushes the fœtus out is the force of the uterus. The uterus is provided with thick muscular walls, so that it can do this, and the force of its intermittent contractions are very powerful. They are not

under the voluntary control of the woman. During the later stages of childbirth, when the cervical canal is so widely open that the foetus can pass through, the abdominal muscles also help in pushing the child out. The woman holds her breath and strains and forces the child down in the same way as she empties her bladder or rectum by straining.

The Parturient Canal.—The parturient or childbirth canal consists of: 1, the lower uterine segment; 2, the cervical canal; 3, the vagina and vulva; and 4, the bones of the pelvic canal, which surround and encase the *elastic dilatable tube* formed by 1, 2 and 3, with a *rigid unyielding tube* of bone.

1. The Lower Uterine Segment.—Although the uterus is the organ that forces the foetus out, a small part of the uterus lies below the widest part of the foetus, as you see in the diagram on p. 35. It is clear that this part must expand to allow the foetus to pass. Nature has arranged for this by making the walls of this lower part of the uterus thinner and able to be stretched. This thinner walled portion is known as the lower uterine segment.

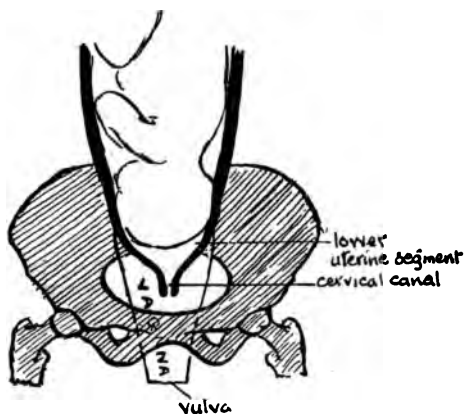


FIG. 8.—Diagram of the parturient canal.

2. The Cervical Canal.—I have already described the cervical canal and its two mouths, the os internum and the os externum. In order that the foetus may pass, the canal has to be widely opened. This is brought about by the uterus in two ways: 1, the thick muscle of the body of the uterus pulls the cervical canal up and opens it; 2, the bag

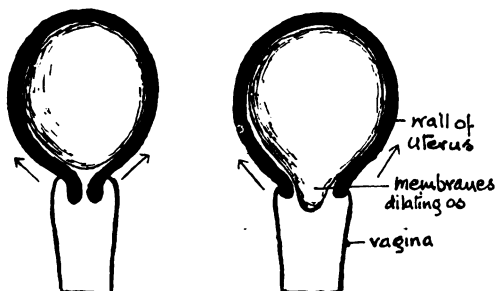


FIG. 9.—Diagram to show the means by which the cervical canal is opened.

of waters is pushed into the canal each time it is opened, just as some one when resisted will push their foot through a slightly opened door to keep it open for another push. The bag of waters

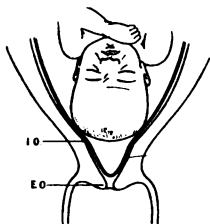
bursts when the canal is fully or nearly fully dilated and the head is pushed down to keep the canal open.

This opening of the canal is painful. Hence the inter-



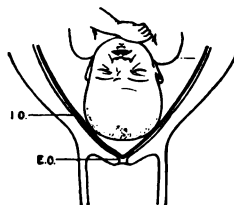
The closed cervical canal.

I.O. Internal os.
E.O. External os.



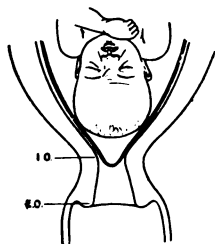
Taking up of a primiparous cervical canal.

I.O. Internal os.
E.O. External os.



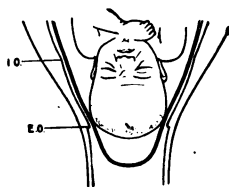
Further stage in the taking up of a primiparous cervical canal.

I.O. Internal os.
E.O. External os.



Taking up of a multiparous cervical canal.

I.O. Internal os.
E.O. External os.



Fully dilated cervical canal.

I.O. Internal os.
E.O. External os.

FIG. 10.

mittent contractions of the uterus, painless during pregnancy, now cause pain and are popularly known as the PAINS.

The pulling up or taking up of the Cervical Canal.—I have said the muscle of the body of the uterus pulls the canal up and open in the direction indicated by the arrows, until eventually the cervical canal and the vagina become one passage. Naturally, on looking at the diagram, you would expect first the internal os to open, then the canal, and finally the external os. This is what happens in primiparæ. But the fibrous tissue that rings round and closes the external os is torn by the passage of a full-term child, so that in a multipara there is no closed external os, at least you can get your finger tip into it. The uterus of a multipara then is closed by the internal os and there is no tight external os.

3. The Vagina and Vulva.—Having passed the cervical canal, the foetal head now enters the vagina and is finally pushed out of the vulva, followed by the rest of the foetus.

4. The Pelvic Bones.—If you look at a bony pelvis, you will see that it consists above of bony wings, which shelf down to a more or less circular canal, as if the wings, so to speak, were intended to direct the foetal head towards the canal. This, although by no means the only reason of the shape of the pelvis, is the reason which interests midwives. The pelvis consists of four bones. The sacrum with the coccyx forming its tip, and the two ossa innominata, one on the left and one on the right.

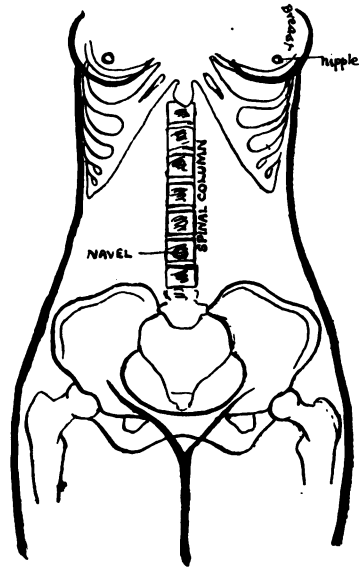


FIG. 11.—The relation of the pelvic bones to the rest of the skeleton.



FIG. 12.—The normal bony pelvis.

Os Innominatum.—WHY SO CALLED? Anatomists usually try to get some word from Greek or Latin

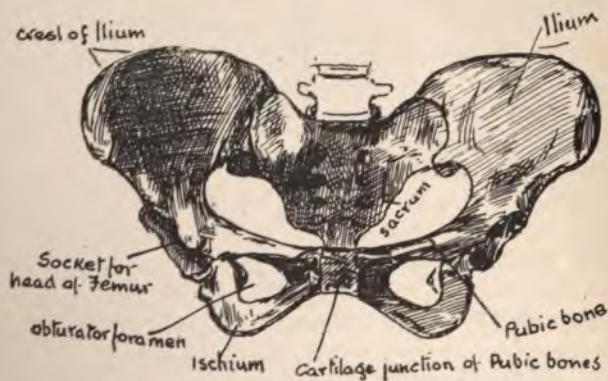


FIG. 13.—The normal bony pelvis.

which describes the shape of the bone, but so puzzling is the shape of this bone that they were obliged to call it the

nameless bone, os being the Latin for bone, and innominatum the Latin for nameless.

DESCRIPTION OF THE BONE.—The whole bone is formed by the union of three bones. In the baby these three bones are separated from each other by three bands of bluish cartilage. In the adult they form one bone, but for the purposes of description the three separate parts are still distinguished. If you look at the diagram you will see a more or less round space in the lower and front part of either bone. This space is called the obturator foramen. The three



FIG. 14.—Division of os innominatum.

lines drawn across the bones in the diagram from this foramen correspond to the three bands of cartilage that separate the three bones in the infant. The three bones are called : 1, the ilium ; 2, the ischium ; 3, the pubes.

1. **THE ILIUM.**—The ilium is the biggest portion of the os innominatum and includes the great wing of bone that is seen in the picture. The upper border of this wing is known as the crest. The crest ends in front in a prominent knob, which you can readily feel on yourself or on a patient. This knob is known as the anterior (Latin, in front) superior (Latin, upper) *spine*. The ilium is united to the sacrum by stout fibrous bands and a joint which permits a little movement. This joint is called the sacro-iliac joint.

These points about the ilium you should remember.

2. **THE ISCHIUM.** The ischium forms the lowest part of the os innominatum and you see it encircling the lower border of the obturator foramen. The lowest part of the ischium is formed of a dense mass of bone, called the ischial tuberosity. The ischial tuberosities, one on either side, are dense and strong, for when we sit down our bodies rest on the ischial tuberosities.

3. **THE PUBES.** The two pubic bones join in the

middle line in a firm joint known as the pubic symphysis (*symphysis*—Greek, a natural joining), and form the front wall of the pelvic canal.

The Sacrum.—The sacrum is the large wedge-shaped bone which is wedged in between the two iliac bones and joins with them in the two sacro-iliac joints. It forms the posterior (Latin, behind) wall of the pelvic canal. Its upper border is made prominent from the fact that the spine that joins it bends backwards. It is consequently known as the sacral promontory (*see* p. 38).

The Coccyx.—The coccyx, the remnant of the tail bones, is a little bone joined to the tip of the sacrum by the movable sacro-coccygeal joint. Owing to the free movability of this joint the coccyx is easily pushed back out of the way by the advancing foetus and is therefore of no particular interest.

The Obstetrical Pelvis.—(Obstetrical is another word for midwifery, and an obstetrician is a doctor who attends a midwifery case. Curiously enough in the Latin it means an obstructor.) The obstetrical pelvis is divided, for the sake of description, into two parts, the false and true pelvis.

The False Pelvis.—The false pelvis is formed by the large wings of the ilium. It has very little to do with labour, other than tending to direct the foetal head over the inlet of the true pelvis. The hollow made by the concavity of each iliac wing is known as an iliac fossa.

The True Pelvis or Pelvic Canal.—**THE INLET OR BRIM.** If you look at the picture of the Pelvis on p. 41, which shows the pelvis in the position it assumes when the woman is standing upright, you can look down the cavity or canal to which the bones of the pelvis form a wall. You also see a definite rim to the entrance to this canal. The rim is formed by the upper border of the pubic bones in front. At the sides the rim is formed by ridges known as the ileo-pectineal ridges, and posteriorly the rim is formed by the upper border of the sacrum.

This rim runs round the **INLET OF THE PELVIS** and is of great importance in midwifery.

THE PLANE OF THE INLET. If you fitted a piece of flat

cardboard to cover the inlet, its level surface would correspond to what is called the plane of the inlet.

THE CAVITY OF THE PELVIS is that part of the pelvic canal which lies between the inlet of the pelvis and the outlet. The canal is much curved, for whereas its posterior wall formed by the sacrum is $4\frac{1}{2}$ inches long, its anterior wall formed by the pubic bones is only $1\frac{1}{2}$ in. long.

THE OUTLET OF THE PELVIS is unlike the inlet in that it is not encircled entirely by bones, but partly by bones and

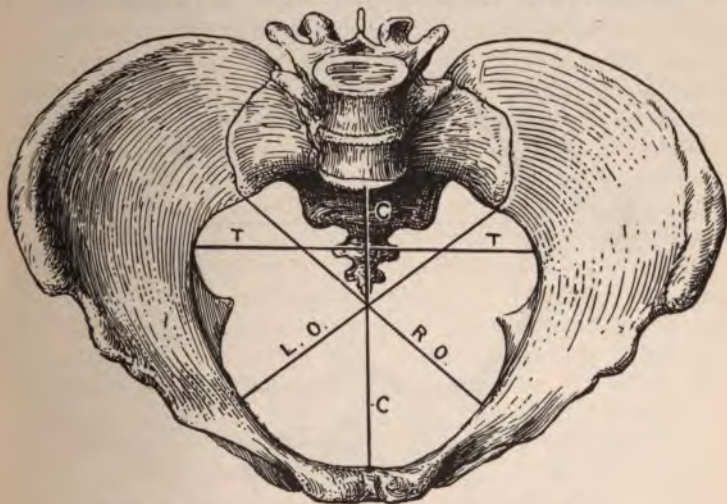


FIG. 15.—The brim or inlet of the pelvic cavity.

C C. Antero-posterior diameter.

L O., R O. Oblique diameters.

T T. Transverse diameter.

partly by ligaments. Fig. 16, p. 42, is a picture of the outlet, the pelvis of Fig. 15, p. 41, being turned upside down. The outlet is formed by the lower borders of the pubic and ischial bones, the two ligaments known as the sacro-sciatic ligaments and the tip of the sacrum.

Measurement of the Inlet.—The brim of the pelvis is slightly oval in shape. Its size is given by three diameters : 1, the antero-posterior, from front to back ; 2, the oblique ; 3, the transverse, from side to side.

THE ANTERO-POSTERIOR OR TRUE CONJUGATE DIAMETER is the diameter that stretches across the inlet from the middle of the sacral promontory to the nearest part of the pubic symphysis. It measures 4 in.

THE OBLIQUE DIAMETERS stretch from one sacro-iliac joint obliquely across the inlet to a little prominence of bone known as the pectineal eminence. They each measure 5 ins.

THE TRANSVERSE DIAMETER.—The transverse diameter is the greatest width of the inlet of the pelvis. It

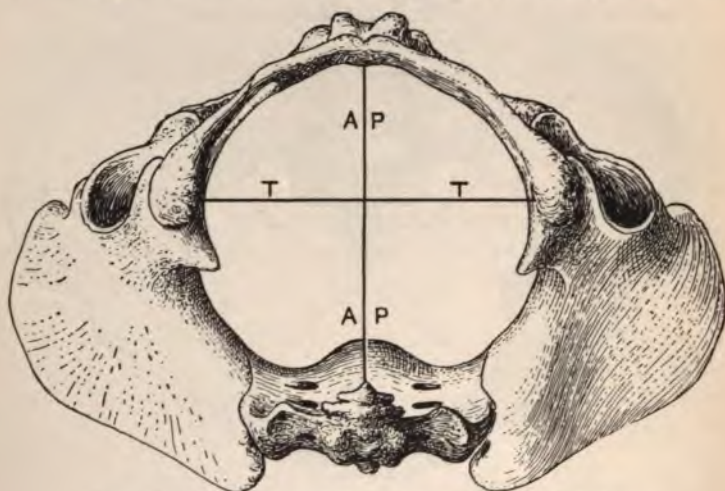


FIG. 16.—The outlet of the pelvis as seen from below.

A P. Antero-posterior diameter.

T T. Transverse diameter.

measures 5 ins., but owing to bulky muscles which cover the bone on either side, it is actually a little less than the oblique diameters.

Measurements of the Cavity.—They are of no practical importance. Antero-posterior, oblique and transverse are all about $4\frac{1}{2}$ in.

Measurements of the Outlet.—THE ANTERO-POSTERIOR DIAMETER stretches from the tip of the sacrum to the lower border of the symphysis pubis. It measures 5 in.

THE OBLIQUE does not really exist, for the ligaments, from which it would have to be measured, give with pressure and are not rigid like bone.

THE TRANSVERSE stretches from the inner border of one ischial tuberosity to the inner border of the other. It measures 4 ins.

Table of Measurements.—

	Antero-posterior.	Oblique.	Transverse.
Inlet	4	5	5
Outlet	5	—	4

Importance of the Measurements of the Pelvic Canal.—The foetal head is the largest part of the foetus. The great problem of labour is, how will the foetal head pass through the bony pelvic canal. The bony pelvic canal is of course rigid. The parturient canal represented by the lower uterine segment, the cervical canal, the vagina and the vulva, form an inner dilatable tube. The head is pushed through it, much as a finger is pushed into a new glove, that is with some difficulty on the first occasion, but after this with greater and greater ease.

But the bony tube is unyielding. To pass through it the dimensions of the foetal head must be smaller than the dimensions of the inlet, cavity and outlet. Practically, however, the dimensions of the inlet are all-important, for when once the foetal head has entered the pelvic canal it so rarely meets with obstruction owing to the dimensions of the cavity and outlet being larger compared to the inlet, that for practical purposes *a nurse must remember that the ease or difficulty with which a child is born depends mainly on the ease or difficulty with which the foetal head passes the inlet or brim of the pelvis. The question is one of entrance.*

Now the dimensions of the normal pelvic inlet are five inches obliquely, $4\frac{1}{2}$ inches transversely (for the transverse diameter is narrowed by bulky muscles), and 4 inches antero-posteriorly.

In the next chapter we consider the foetus, paying special attention to the anatomy and measurements of the foetal skull.

CHAPTER VI

LABOUR—THE FŒTUS

The Fœtal Skull.—The second factor in the easy passage of the fœtal head is the size of the fœtal head itself. It is now necessary for you to learn and remember the anatomy and measurements of the fœtal skull.

Anatomy.—The fœtal skull is composed of the face, the base and the cranium. The bones of the face are many. The base is the ring of firm bones that joins the head to the spine and forms a foundation from which the bony encasement of the brain or cranium springs. The bones of the face and base are of no importance to the midwife, but she must know the names of the five bones which make up almost the entire bulk of the cranium. The figures will help you to understand the different names, but both the anatomy of the pelvis and the fœtal skull you will learn far more quickly, if you handle the bones and constantly go over the different names. In fact you will find it exceedingly difficult to properly grasp this process of labour unless you can follow it step by step with a fœtal skull and pelvis.

The five bones are: 1, the occipital; 2, the two parietal; 3, the two frontal.

THE OCCIPITAL BONE (*occiput*—Latin, back of the head) is the bone at the back of the head, the bone upon which the head rests when one lies on one's back.

THE TWO PARIETAL BONES (*parietalis*—Latin, belonging to walls) are in front of the occipital bone and form the main part of the vertex or vault of the skull. On either side they form the two bosses of bone known as the PARIETAL

EMINENCES. They are joined to the occipital bone by a strip of loose membrane shaped somewhat like a L, which is known as the LAMBDODIAL SUTURE (*lambda eidos*—Gr. for “L” and like). They are joined to each other along the middle of the vault of the skull by another strip of loose membrane known as the SAGITTAL SUTURE (*sagitta*—Latin, arrow). They are joined to the two frontal bones by a strip of membrane which sweeps transversely over the crown of the head, which is known as the coronal suture (*corona*—Latin, a crown).

THE TWO FRONTAL BONES (*frons*—Latin, front) form the brow and forehead of the head. They are joined down the middle line by a slip of membrane known as the FRONTAL SUTURE.

THE FONTANELLES. — A fontanelle (*fontanelle*—Latin, a little spring) is the space formed by the meeting-place of sutures. There are two, you must know: one at the posterior end of the sagittal suture, and one at the anterior.

THE POSTERIOR FONTANELLE is a small membranous space formed by the meeting of the lambdoidal suture on either side and the posterior end of the sagittal suture. It is thus the meeting-place of THREE sutures.

THE ANTERIOR FONTANELLE, or bregma, is a larger lozenge-shaped membranous space formed by the meeting-place of the anterior end of the sagittal suture with the coronal suture on either side and the posterior end of the frontal suture in front. It is thus the meeting-place of FOUR sutures.



FIG. 17.—The foetal skull.

Importance of the Sutures and Fontanelles in Labour.—The sutures and fontanelles are useful because they enable the head to be squeezed into a smaller bulk as it passes through the pelvic canal. The fontanelles are closed by pressure during the passage and the pliant membrane of the sutures enables the edge of one parietal bone to overlap the other, and both parietal bones to overlap the edge of the occipital bone and the edge of the frontal bones. Similarly the frontal suture enables the edge of one frontal to overlap the edge of the other. This overlapping decreases the bulk of the head.

Moulding of the Head.—There is yet another way in which the width of the head can be diminished during its passage. The bones of the cranium are not hard, like adult bones, as you will see if you take a foetal skull. When they are pressed upon by the hard bony walls of the pelvic canal they are squashed in a little and the part that is not pressed on bulges as compensation. You will notice the alteration in shape of the head of a baby by moulding, whenever labour has been prolonged.

Shape and Dimensions of the Foetal Skull, and their Significance.—Moulding can only alter to a slight extent the shape of the foetal skull. To understand labour it is necessary to have an accurate knowledge of its shape and dimensions.

The foetal head is more or less egg-shaped. Balance the foetal head on the top of its head with the tip of the chin its highest point and you will see this. It is like balancing an egg on its end.

Its greatest length you will see is from the point on the sagittal suture between the fontanelles, but somewhat nearer the anterior than the posterior to the tip of the chin.

This measurement from the vertex to the chin is known as the **VERTICO MENTAL DIAMETER** and measures about 5 ins.

Still keeping the foetal skull balanced you see the greatest measurement from back to front will be from a point below the occipital protuberance—the knob you can readily feel on your own occipital bone where the neck joins the head—

to the anterior fontanelle or to the frontal suture in front of the anterior fontanelle. These measurements or

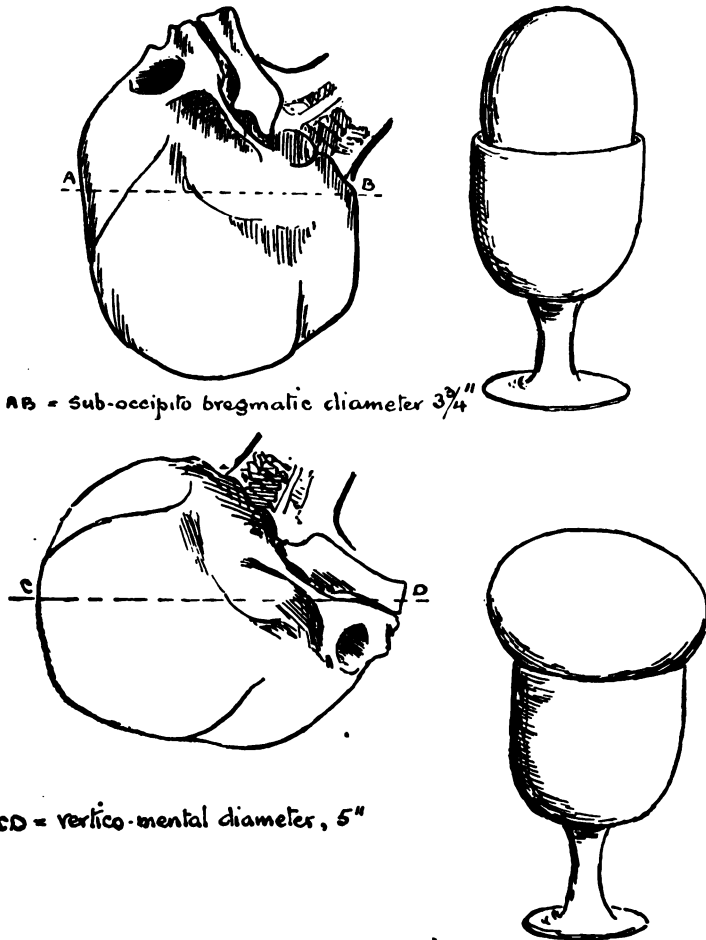


FIG. 18.

Diagrams to show the egg shape of the foetal head and its significance.

diameters are known as the SUBOCCIPITO BREGMATIC (bregma is another name for the anterior fontanelle) and

SUBOCCIPITO FRONTAL DIAMETERS respectively. The first averages $3\frac{1}{2}$ ins., the second 4 ins.

The greatest measurement from side to side you will see is between the two parietal eminences. This is known as the INTERPARIETAL DIAMETER and measures $3\frac{1}{2}$ ins.

Thus you see *the fœtal skull may be described as more or less egg-shaped, its greatest length being from chin to vertex and measuring 5 ins., its greatest measurement from before back between $3\frac{1}{2}$ and 4 ins., and its greatest measurement from side to side $3\frac{1}{2}$ ins.*

Now every one knows how to fit an egg into an egg-cup.

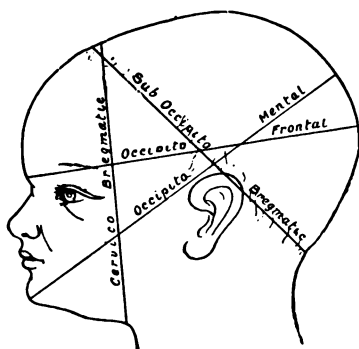


FIG. 19.—The antero-posterior diameters of the fœtal head.

Nature fits the fœtal head into the pelvic brim much as an egg is fitted into an egg-cup: namely, its length is at right angles to the plane of the brim or inlet, and the girth represented by the suboccipito bregmatic and interparietal diameters are encircled by the rim of the inlet.

To allow of this, the VERTEX of the fœtal skull must be the first part of the fœtus to enter the brim (*see* Fig. 18, p. 47), and

the head must be flexed on the neck, so that the chin of the fœtus touches the chest. This is by far the commonest position for the fœtal head to take with regard to the pelvic brim.

Now if you turn the egg upside down, it will also fit into the egg-cup. So, too, if you turn the fœtal head upside down and make the chin and FACE enter the brim first, the fœtal head will have no difficulty in fitting into the brim.

But to allow of this *the fœtal head must be extended on the neck* (*see* Fig. 18, p. 47).

But if you put the egg with its length across the brim of the egg-cup, it would not enter the egg-cup.

So, too, if the foetal head lies with its length across the pelvic brim it cannot fit into the brim, if it and the pelvic inlet are of the average measurements.

To allow of its length lying across the pelvic inlet, the head *must be neither extended nor flexed on the neck* (see Fig. 24, p. 54). There are intermediate grades between full flexion and full extension, between the two positions of advantage, and sometimes, owing to reasons that will be given to you later, the head lies in these disadvantageous positions.

Thus if the head is in flexion, half-way between full flexion and neither flexion nor extension, the girth of the head that is encircled by the rim of the inlet is represented by the INTERPARIETAL DIAMETER of $3\frac{1}{4}$ ins. and the OCCIPITO-FRONTAL DIAMETER measured from the occipital protuberance to the forehead. This diameter is $4\frac{1}{2}$ ins. If the head is neither flexed nor extended the VERTICOMENTAL and INTERPARIETAL DIAMETERS try to fit the inlet. If the head is half-way between either flexion or extension, the girth that is encircled by the rim of the inlet is represented by the INTERPARIETAL DIAMETER and the CERVICO VERTICAL DIAMETER measured from the neck below the chin to the vertex. This diameter is about $4\frac{1}{2}$ ins.

Finally, if the head is fully extended on the neck, we have the INTERPARIETAL DIAMETER and the CERVICO BREGMATIC DIAMETER, measured from the neck below the chin to the bregma or anterior fontanelle. This diameter measures $3\frac{1}{4}$ ins.

Thus you see the ease with which the foetal head of average size enters the inlet of average size depends on the amount of flexion or extension ; and the ease or difficulty of entrance is the most important part of the mechanism of labour.

You also notice that the interparietal diameter is common to all the different positions of the head with regard to the brim. The only exception to this rule is dealt with on p. 228.

The Breech.—Occasionally the breech of the child lies over the inlet. It is smaller than the head and therefore enters the inlet easily. Its dimensions are given by the greatest

... ..

width between the iliac bones, the **INTER-ILIAC OR BIS-ILIAC DIAMETER**, which measures $3\frac{1}{2}$ ins. and the distance between the back of the sacrum and the front of the pubis, the **SACRO-PUBIC DIAMETER**, which measures $2\frac{1}{4}$ ins. The real difficulty in delivery is the passage of the head, which, when the child is born breech first instead of head first, is known as the **AFTERCOMING HEAD**.

TABLE OF FŒTAL MEASUREMENTS.

THE FOETAL HEAD.

THE BIPARIETAL DIAMETER is the distance between the parietal eminences on either side, and measures $3\frac{1}{4}$ ins.

THE BITEMPORAL DIAMETER is the distance between the side of one temple and the side of the other, and measures $3\frac{1}{2}$ ins.

THE SUBOCCIPITO-BREGMATIC DIAMETER, from below (*sub*—Latin, below) the occipital protuberance to the bregma or anterior fontanelle, measures $3\frac{1}{4}$ ins.

THE SUBOCCIPITO-FRONTAL DIAMETER, from below the occipital protuberance to the forehead, measures 4 ins.

THE OCCIPITO-FRONTAL DIAMETER, from the occipital protuberance to the forehead, measures $4\frac{1}{2}$ ins.

THE VERTICO-MENTAL DIAMETER (*mentum*—Latin, chin), from the vertex to the chin, measures 5 ins.

THE CERVICO-VERTICAL DIAMETER, from the neck below the chin to the vertex, measures $4\frac{1}{2}$ ins.

THE CERVICO-BREGMATIC DIAMETER, from the neck below the chin to the bregma, measures $3\frac{1}{4}$ ins.

THE BREECH.

THE INTER-ILIAC DIAMETER is the greatest width between the iliac bones. It measures $3\frac{1}{4}$ ins.

THE SACRO-PUBIC DIAMETER, from the back of the sacrum to the front of the pubis, measures $2\frac{1}{4}$ ins.

CHAPTER VII

LABOUR—POSITIONS AND PRESENTATIONS

Definition of Terms.—Before we enter into the mechanism of labour there are a few terms the meaning of which you must clearly understand.

PRESENTATION.—The presenting part is the most advanced part of the foetus, the part you first touch with your fingers when you make a vaginal examination.

POSITION.—The position is determined by the relation of the back of the foetus to the abdominal wall of the mother.

LIE.—The lie of the foetus is the relation of the length of the foetus to the length of the uterus, in other words, the long axis of the foetus to the long axis of the uterus. Thus we speak of a longitudinal lie when either the breech or head presents, and a transverse or oblique lie when the foetus lies across, or obliquely, in the uterus.

The First Vertex Presentation is by far the commonest, and one you must thoroughly master. If you master it, I think I shall have no difficulty in explaining the others to you.

In the first vertex, the vault of the head, or vertex, is the most advanced part of the foetus and the part you would touch first if you made a vaginal examination. The head is bent forward on the chest to allow the vertex to present. The long axis of the foetus is longitudinal, and the back of the foetus is turned to the front and to the left in its relation to the abdominal wall of the mother.

In first vertex, then, the vertex PRESENTS, the head is FLEXED, the LIE is longitudinal, and the POSITION is with the foetal back forward and to the left.

Vertex II you get by spinning the child round a quarter of a circle and so alter its POSITION so that the back of the foetus is now in front and to the right. The vertex PRESENTS, the head is FLEXED, the LIE is longitudinal, but the POSITION is back forward and to the RIGHT.



FIG. 20.—Vertex I.



FIG. 21.—Vertex II.

Vertex III you get by spinning the child round another quarter of a circle in the same direction. The vertex PRESENTS, the head is FLEXED, the LIE is longitudinal, but the POSITION is with the foetal back BACKWARDS and to the right.

Vertex IV you get by spinning the child round the last quarter of a circle in the same direction. The vertex PRESENTS, the head is FLEXED, the LIE longitudinal, the POSITION is with the foetal back backwards and to the LEFT.

From these four vertex presentations and positions you can easily reckon out the other presentations and positions.

Brow Presentation and Positions.—Put the child in the

first vertex position and slightly extend the head so that the head is neither flexed nor extended. You will notice that the brow of the child is now the most advanced part of the foetus, in other words, the brow presents. This is the Brow I position. The brow PRESENTS, the head is NEITHER FLEXED NOR EXTENDED, the LIE is longitudinal, the POSITION is with the back forward and to the left.



FIG. 22.—Vertex III.

Similarly, Brow II can be got from Vertex II, Brow III from Vertex III, and Brow IV from Vertex IV.



FIG. 23.—Vertex IV.

Face Presentation and Positions.— Again put the child in the first vertex position and fully extend the head. You will notice now that the face presents. This is Face I position. The face PRESENTS, the head is EXTENDED, the LIE is longitudinal and the POSITION is with the foetal back forwards and to the left. Face II can be similarly got

from Vertex II, Face III from Vertex III, Face IV from Vertex IV.

Transverse Presentation and Positions.—Put the child in the first vertex position and push the child's head up into the left iliac fossa or flank. You notice now that the arm, shoulder or side of the chest PRESENTS, the FLEXION OR EXTENSION of the head outside the brim is of no moment, the

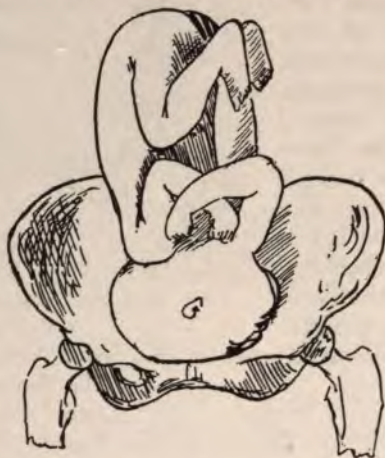


FIG. 24.—Brow II.

LIE is TRANSVERSE OR OBLIQUE, and the POSITION is with the back forward and to the left. The position is Transverse I. Similarly you can get Transverse II by pushing the head of Vertex II into the right iliac fossa or flank, Transverse III from Vertex III, and Transverse IV from Vertex IV.

Breech Presentation and Positions.—Put the child in the first vertex position and completely reverse it. You now notice the breech PRESENTS, THE FLEXION OR EXTENSION of the head outside the brim is of no moment (as a fact, it is kept flexed by the fundus), the LIE is longitudinal, and the POSITION is with the foetal back to the left and front. The position is that of Breech I. Reverse Vertex II and you get

Breech II, Vertex III gives Breech III, and Vertex IV gives Breech IV.

Tables.—You have now learnt all the positions and presentations, but to make you remember these more easily the following tables are inserted :—

Vertex I.—Vertex presents, lie longitudinal, back in front and to left.

Vertex II.—Vertex presents, lie longitudinal, back in front and to right.



FIG. 25.—Face I.

Vertex III.—Vertex presents, lie longitudinal, back and to right.

Vertex IV.—Vertex presents, lie longitudinal, back and to left.

Slightly extend the head so that head is between flexion and extension :—

Vertex I becomes Brow I. Brow presents, lie longitudinal, back in front and to left.

Vertex II becomes Brow II. Brow presents, lie longitudinal, back in front and to right.

Vertex III becomes Brow III. Brow presents, lie longitudinal, back behind and to right.

Vertex IV becomes Brow IV. Brow presents, lie longitudinal, back behind and to left.

Fully extend the head :—

Vertex I becomes Face I. Face presents, lie longitudinal, back in front and to left.

Vertex II becomes Face II. Face presents, lie longitudinal, back in front and to right.



FIG. 26.—Transverse I.

Vertex III becomes Face III. Face presents, lie longitudinal, back behind and to right.

Vertex IV becomes Face IV. Face presents, lie longitudinal, back behind and to left.

Push the head into the iliac fossa or loin to which the foetal back is directed :—

Vertex I becomes Transverse I. Shoulder as a rule presents, lie transverse, back in front and to left.

Vertex II becomes Transverse II. Shoulder as a rule presents, lie transverse, back in front and to right.

Vertex III becomes Transverse III. Shoulder as a rule presents, lie transverse, back behind and to right.

Vertex IV becomes Transverse IV. Shoulder as a rule presents, lie transverse, back behind and to left.

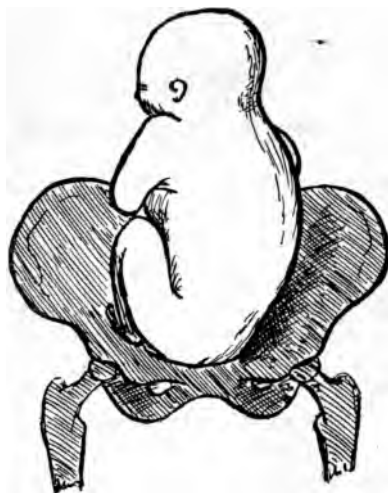


FIG. 27.—Breech I.

Completely reverse the child :—

Vertex I becomes Breech I. Breech presents, lie longitudinal, back in front and to left.

Vertex II becomes Breech II. Breech presents, lie longitudinal, back in front and to right.

Vertex III becomes Breech III. Breech presents, lie longitudinal, back behind and to right.

Vertex IV becomes Breech IV. Breech presents, lie longitudinal, back behind and to left.

CHAPTER VIII

LABOUR—MECHANISM

Reasons of Flexion of the Head which make the Vertex Present.—Any of you who are interested in natural history must have wondered at the adaptation of a creature or organ to its circumstances. Take the hand for example. You can hardly imagine a more wonderful and useful thing than the well-trained hand. Therefore, you will not be surprised to hear that as vertex presentation is the best and easiest mode of delivery, nature has so arranged that it shall also be the commonest. The means by which this is arranged are two :—

1. If you look at a foetal skull you will notice that the occiput slopes, whereas the forehead presents a prominent brow. When the head is pushed down into the inlet or brim, the fit is always a close one and so the passage of the head is resisted. The sloping occiput slips down more easily than the prominent forehead, and consequently the posterior fontanelle or part of the vertex near it becomes the most advanced part of the foetus and presents.

2. Again, if you look at the foetal head you will see that there is more of the foetal head in front of the joint with the spine than behind. You know, too, the lever action of a swing. Imagine the foetal head a swing, the front part the longer arm, the back the shorter. If you hung an ounce weight on the forehead and an ounce weight on the occiput the forehead would be weighed down and the head would flex. This is just what happens, for the resisting soft parts of the undilated pelvic canal, as the foetus is pushed down by the uterus, press on the head with equal force. Con-

sequently, the front of the head is resisted more than the back of the head and so it is pushed up and the head flexes.

Reasons of Extension or Non-Flexion of the Head which make the Face or Brow Present.

—Again, if you think of natural history, you will remember the many exceptions to perfect adjustment. For example, you are sure some time to come across babies born with defects such as club foot. Similar



FIG. 28.

Diagram of forces that produce flexion.

exceptions occur in the process of childbirth. Although vertex presentations occur in about 95 cases out of 100, some 5 in 100 present abnormally. The majority of these are breech and transverse, with the causes of which I shall deal in their separate chapters. The rest are brow or face, due to slight or complete extension of the head. There are two principal reasons for partial or complete extension :—

1. The first is flattened pelvis. This is the common form of deformed pelvis. In it the pelvic inlet is flattened from before backwards, so that the antero-posterior diameter is less than the normal 4 ins. Now, when the fetal head is pushed down the interparietal diameter of $3\frac{3}{4}$ ins. normally passes easily. But in a flattened pelvis this diameter may not be able to pass at all, or only with great difficulty. Then the front of the head, represented by the smaller bi-temporal diameter of $3\frac{1}{2}$ ins., is pushed down. When the front of the head descends and the back does not, extension must result.

2. The second is an oblique uterus. As you see from the diagram, in an oblique uterus, one that falls over to the left or right side of the mother's abdomen, the face may actually be over the brim from the beginning and so readily get pushed down first. Obviously for this to happen the uterus must fall over to the side, from which the back of the foetus is directed.

Mechanisms of the Various Presentations.—The knowledge of the last three chapters will enable you to understand the mechanisms by which the child is born according to the manner in which it presents.

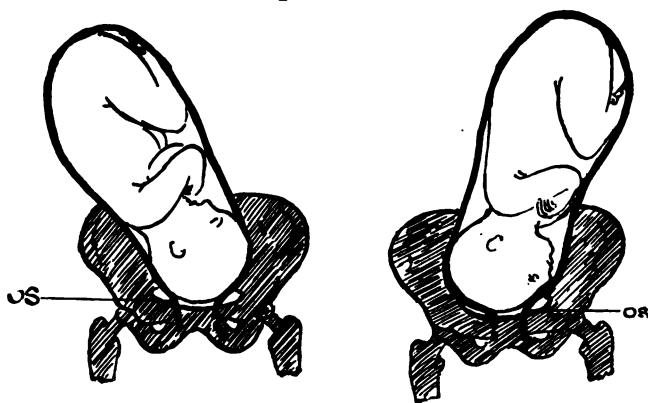


FIG. 29.—Diagrams to show the action of an oblique uterus in producing extension.

The Mechanism of Vertex Presentations.—As the uterus pushes the foetus down, the resistance offered by the undilated pelvic canal makes the head flex. At the brim the suboccipito bregmatic or suboccipito-frontal diameter lie in one or other oblique diameter (of the inlet). But at the outlet the antero-posterior diameter is the longer, being 5 ins. It is an advantage, then, for the foetal head to pass the outlet with the suboccipito bregmatic diameter, antero-posterior. This is managed by the action of the muscles which form a sort of floor to the pelvic cavity and are known as the muscles of the pelvic floor. These muscles push the most advanced part of the foetus to

the front. In the flexed vertex, the occiput is most advanced and gets pushed to the front under the pubic bones. The suboccipito bregmatic diameter thus comes to lie in the antero-posterior diameter of the pelvic outlet ; in other words, the child's neck twists, so that the occiput is to the front and the child's face looks back to the mother's sacrum.

These three movements are known as : (1) descent ; (2) flexion ; (3) internal rotation.

The neck is then fixed under the pubic arch and the face is born by sweeping over the posterior border of the vulva, to do which the head extends. As soon as the head is born, the neck, which twisted when the occiput turned to the front, untwists with a little jerk, which you will see at a normal childbirth. This is known as restitution. Lastly, the breadth of the shoulders at the brim copies the head by lying in an oblique diameter in the brim and then turning to fit the antero-posterior diameter of the outlet. This turn of the shoulders

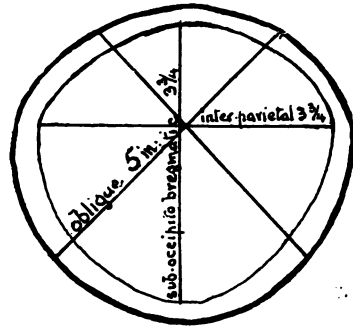


FIG. 30.—Diagram to show section of foetal head with vertex presentation fitting within the pelvic inlet.

turns the head a little more in the same direction as the jerk of restitution. The movement is known as external rotation. The anterior shoulder then fixes against the pubes and the posterior shoulder sweeps over the posterior border of the vulva. After the shoulders the rest of the child quickly follows.

Thus the mechanism of the child presenting by vertex is summed up in the following movements : (1) descent the whole time ; (2) flexion ; (3) internal rotation ; (4) extension ; (5) restitution ; (6) external rotation ; (7) birth of trunk and limbs.

Occipito Posterior Presentations.—Vertex III and IV.—In

the majority of cases the head flexes fully, the occiput becomes the most advanced part of the fœtus and is pushed by the muscles of the pelvic floor to the front. The cases are just ordinary vertex presentations.

Sometimes, however, when flexion is incomplete, the forehead is as advanced, or more advanced, than the occiput and is turned to the front. The forehead fixes against the pubic bone, and the occipito-frontal diameter of $4\frac{1}{2}$ ins. has to pass the antero-posterior diameter of 5 ins. This is difficult and may require a doctor's help. Sometimes, however, with the forehead fixed against the pubic bone, the occiput is born by flexion and then the forehead is born.

The movements are then : (1) descent throughout ; (2) partial flexion ; (3) internal rotation of forehead to the front ; (4) flexion ; (5) restitution ; (6) external rotation ; (7) birth of trunk and limbs.

The Mechanism of Brow Presentations.—When the brow presents the mento-vertical diameter of 5 ins. would have to lie in one oblique diameter of 5 ins. The presentation must change to vertex or face, if the head is to pass the inlet at all. In brow cases this is what happens, either the head flexes or extends above the brim or a doctor has to bring about delivery in some other way. A small child may in very rare cases be born as a brow presentation, if the pelvis is extra large, for you must remember that these measurements are only average measurements, that is to say, a large number of female pelves and fœtal heads have been measured and an average struck. They are not strictly exact for each individual case.

The Mechanism of Face Presentations.—The head is extended either because of contracted pelvis or oblique uterus, the face descends and the chin becomes the most advanced part of the fœtus. The chin, therefore, is pushed to the front and comes under the pubic arch. The head then flexes and so the occiput sweeps over the posterior border of the vulva and the head is born.

The movements, therefore, are : (1) descent throughout ; (2) extension ; (3) rotation of chin to the front ; (4)

flexion ; (5) restitution ; (6) external rotation ; (7) birth of trunk and limbs.

Incomplete Extension.—Sometimes, however, extension is incomplete and this is commoner in Face I and II. The forehead is the most advanced part of the foetus and is turned to the front. The birth of the child would not now be difficult were it not that with further descent of the head, the neck and upper part of the chest of the foetus enter the pelvic cavity and the foetus jams, as in the diagram. Further advance becomes impossible without the help of a doctor.

The Mechanism of Breech Presentations.

—The width of the foetal breech from hip to hip is about $3\frac{3}{4}$ ins., from front to back it is only $2\frac{1}{4}$ ins. Therefore, when the breech descends the inter hip or inter iliac diameter—the greatest distance between the crests of the iliac bones—lies in one oblique diameter of the brim. The more advanced hip then rotates to the front and is pressed against the pubic bone. The posterior hip sweeps over the posterior border of the vulva and is born. The anterior hip quickly follows it. The trunk descends. The head, which is kept well flexed by the fundus pressing down on it, lies with the suboccipito-frontal diameter in one oblique diameter of the brim, with the back of the head in front in nearly all cases. The flexed head is pushed down, the back of the head is pressed against the pubic arch, the face and forehead sweep out and the head is born.

In a few cases the face of the foetus turns to the front.

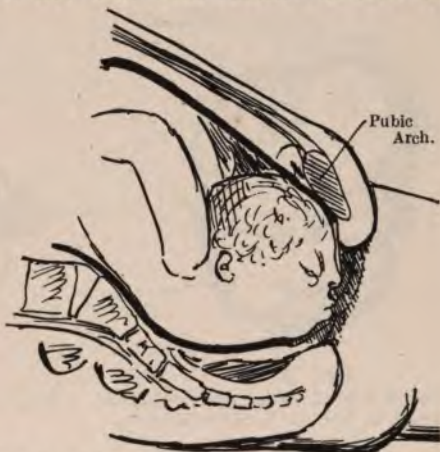


FIG. 31.—Impacted face with chin posterior

Flexion is then not quite so complete and delivery therefore a little more difficult.

The Mechanism of Transverse Presentations.—There is no mechanism to transverse presentations, for the fœtus cannot be born without the doctor's help.

In rare cases dead children that are limp and children



FIG. 32.
Caput succedaneum and moulded head of Vertex I. after delivery

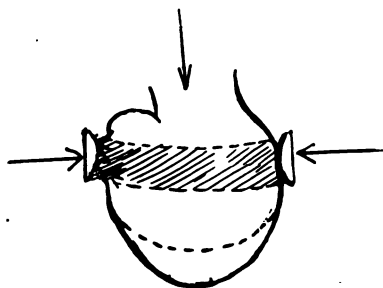


FIG. 33.
Diagram of forces that produce moulding.

that are not full-grown are delivered without help, but these cases are so rare that you need not consider them as practical possibilities.

Moulding of the Head and the Caput Succedaneum (*caput*, head—Latin; *succedaneum*—taking the place of).—If you take a large ball of putty and squeeze it in your hand, the putty will bulge, where it is not in contact with your hand. If you squeeze a wet sponge water will exude into that part of the sponge which is not in contact with your hand. This is the principle of moulding and the caput succedaneum. The head is squeezed, when pushed down, by the unyielding walls of the pelvic canal. It bulges where it is not in contact with those walls. The caput is formed by the fluids of the squeezed tissues which are squeezed into the tissues of the scalp that are not in contact with the walls of the pelvic canal. The caput forms a puffy swelling in the

scalp. In Vertex I, for example, the right parietal bone is not in contact with the pelvic walls, but passes down the centre of the canal. It bulges, therefore, and on it forms the caput. You can work out all the other mouldings and caputs with a foetal skull or dummy by remembering their cause.

CHAPTER IX

CLEANLINESS—THE KIT

YOU are now equipped with sufficient knowledge of pregnancy and labour to understand the practical part of midwifery, namely the treatment of normal pregnancy, of abnormal pregnancy, of normal or ordinary cases of labour, and of abnormal or extraordinary cases of labour.

The first practical points that must engage your attention are : (1) the supreme importance of cleanliness ; (2) your kit and the care you must take of it.

Natural Delivery.—Dr. Archibald Reid, a great authority on Heredity, writes : “ The parturitions of savage women resemble those of the lower animals in their comparative ease, the mother often resuming her duties immediately after birth.”

The Need of Interference.—You see that interference in childbirth is really not a natural thing. Unfortunately, for various reasons into which I need not enter, but reasons mainly arising from the unnatural conditions that civilization has imposed upon them, civilized women do not have their children with the ease that most savage women have them, and so interference, to be sure that all goes well, and that there is no condition present dangerous to either mother or child, is often necessary.

But the less *you* interfere the better, and the principal object of the Rotunda teaching is to train you to help at or conduct, as it is called, a normal delivery with as little interference as possible, and also to discover if any dangerous condition is present with as little interference as possible. When you do feel it necessary to interfere

by making a vaginal examination, it is of *supreme importance that you should be as clean as possible.*

Why Interference in the Past was so Disastrous.—Those of you who have read Dickens and other writers of the past, will remember how frequently mothers, in their novels, died in childbed. In those days death in childbed was very common, and the principal reason was that neither doctors nor midwives understood the *vital importance of cleanliness*. By their vaginal examinations and manipulations with hands that were not clean, and with instruments that were not clean, as we now understand cleanliness, they introduced microbes, which infected their patients and gave them blood poisoning, with the result that their patients sometimes died, or more frequently had long and trying fevers, and became invalids.

Microbes and their Danger.—Microbes are extremely minute living creatures. So small are they, that even strong microscopes, which make them 1,000 times as large as they actually are, only show them as dots or little rods.

There are many different kinds of microbes, and several of them, if they get into the body, give human beings various sorts of blood poisoning. If they get into the vagina and womb of a lying-in woman, she is extremely likely to get some form of blood poisoning.

These dangerous microbes are found in their millions wherever human beings live. They live on your hands, your clothes, your instruments, in the dust of the room, on the patient's skin, in the bed clothing, etc., etc. They are always found in the matter from boils, wounds, abscesses, or the discharges that come from a lying-in woman's uterus or vagina, if she unfortunately gets blood poisoning. If you attend an infected patient they get on to your fingers and instruments and dress, and unless you are careful you may carry them to another patient and give her blood poisoning too.

You are not surprised, then, to find that the Midwives Board rigorously insist that midwives shall thoroughly

recognize the danger of microbes and the precautions to be taken against them.

You will wonder how man can oppose such tiny and dangerous foes found in such countless millions. But science has enabled him to guard against them, and this he does by means of disinfection, a term applied to the killing of microbes.

The principal disinfectants or means by which microbes are killed are, in the order of their power: (1) boiling; (2) soap and water; (3) chemical disinfectants like solutions of carbolic acid, lysol, corrosive sublimate

(a salt of mercury), cyllin and creolin. With these disinfectants we shall be constantly dealing.

Other Names for Microbes.—Microbes are also called germs, bacteria, micro-organisms, or sometimes simply organisms. Micrococci, diplococci,

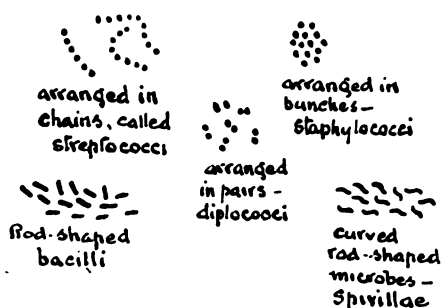


FIG. 34.—The various kinds of microbes.

streptococci, staphylococci, bacilli and spirillæ are the names of special forms of microbes, names which you need not remember.

Some Rules of the Midwives Board.—Although I hope you will all get copies of the rules of the Midwives Board, yet I think it wise for me to quote some of them here to show you how insistent they are on your cleanliness.

“1. The midwife must be scrupulously clean in every way, because the smallest particle of decomposing matter may set up puerperal (*puerperium*—Lat. *puer*, a boy; *parere*, to bear) fevers.

“She must wear a dress of washable material, and over it a clean washable apron.

“NOTE.—It is best to have the sleeves of the dress made so that the midwife can tuck them well up above the

elbows. A midwife who is attending any case which is septic (i.e. in which there is blood poisoning — *sepsis* — Greek, a putrefactive condition), or in which there are foul-smelling discharges, must not go to another case without first changing her dress and thoroughly cleansing and disinfecting her hands and forearms, with such appliances as she may have had occasion to use.

“NOTE.—Unless the cleansing process be thoroughly carried out there will be, even after a healthy confinement, remains of blood, lochia (i.e. discharge that comes from the uterus and vagina for some ten days), or liquor amnii on the fingers, and especially under the nails, which will there undergo decomposition, and so become dangerous to the next patient attended. The midwife must therefore keep her nails cut short, and preserve the skin of her hands as far as possible from chaps and other injuries.

“3. Before touching the genital organs or their neighbourhood the midwife must on each occasion disinfect her hands and forearms.

“4. All instruments and other appliances must be disinfected, preferably by boiling, before being brought into contact with the patient's generative organs.”

Methods of Cleanliness.—The exact method of cleaning the hands, the patient's vulva and its neighbourhood, etc., will be described when we deal with abortion and normal labour.

BOILING.—Boiling for ten minutes will destroy the life of any microbe.

SOAP AND WATER.—With soap and water and a boiled scrubbing brush you can scrub the microbes and dirt from your hands.

DISINFECTANTS.—Chemical disinfectants kill microbes and are used in addition to boiling or soap and water. As their action is uncertain and they frequently fail to kill the microbes, you must never use them in place of, but only in addition to, boiling and soap and water.

The Dress and Apron.—The Care of the Hands and Nails.—Nothing further need be said about the dress, hands and nails than is said in Rule 1 of the Midwives Board. The

apron is best made of batist, for you can scrub batist with soap and water, and boil it after attendance at a case. Hang it up to dry and fold it. It will then be clean.

The Kit.—Your bag should be of leather, unless you buy a small Samways dressing tin painted inside with aluminium paint. You will find this light and convenient; you can clean it by sponging it out with corrosive sublimate solution (1–500). If the bag is of leather, it should have a lining which you can take out and wash and boil. Otherwise it is impossible to keep a bag clean. The bag should also be large enough to carry all your kit easily, and it is a convenience to have one that can be kept open by means of stays.

You should also carry :—

1. A metal female catheter for passing into the bladder to draw off the urine.
2. A pair of round-ended scissors.
3. A glass vaginal nozzle for vaginal injections.

These you should carry in a batist sponge bag or a batist bag that buttons down and closes like an envelope.

4. A nail brush.
5. Some indiarubber finger-stalls or rubber gloves.
Put 4 and 5 also in a small batist bag.
6. A Higginson's syringe for giving enemas, that is injections of soap and water up the back passage to open the bowels. Keep this in a batist bag.
7. A clinical thermometer.
8. A bottle of perchloride of mercury tabloids.
9. A bottle of creolin.
10. A bottle of brandy.
11. A bottle of Squibb's Ergot.
12. A small blue drop-bottle with 1 per cent. silver nitrate.
13. Some strips of clean, soft linen.
14. A dusting tin of powder made up of boracic acid 1 part, zinc oxide 3 parts, and starch 6 parts.
15. A tin of gamgee tissue.
16. A tin of cotton-wool.

17. A packet of stout binder pins.
18. Some stout thread for tying the baby's cord.
19. A piece of batist 3 ft. by 3 ft. to form a mackintosh, upon which the patient may lie and in which, when the case is finished, soiled instruments, etc., can be wrapped up.
20. A batist apron.
21. A piece of soap in a soap tin.
22. Two penny towels.
23. Either a small douche can, or a Rotunda douche, which costs about 7s. 6d.
24. A notebook.

How to use the Rotunda Douche.—The object is to make the douche fluid run out of the jug through the tube and out of the vaginal glass nozzle you have slipped on to the end of the tube.

To do this sink the plunger into the jug and put the metal protector over the edge of the jug. Turn on the tap. Squeeze the ball chamber. This squeezes air out of the ball chamber. Pinch the tube between the ball chamber and the glass nozzle. Release the ball chamber. Fluid is sucked in from the jug. Squeeze again gently and stop pinching the tube. Then squeeze hard. Fluid will run through the tube by siphon action, as long as you hold the nozzle lower than the level of the fluid in the jug.

If you buy a Rotunda douche, practise with it in your bedroom before you use it at a case and you will make

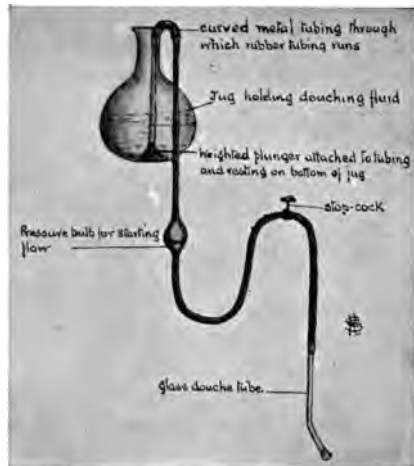


FIG. 35.—The Rotunda douche.

no mistake. You will find it very convenient, for it is not bulky. Carry it in a batist bag, in which you can boil it.

Cleaning the Kit when you come Home from a Case.—You should clean your kit as soon as you come home from a case, even if you come home dead beat in the early hours of the morning, for you may get another call and your kit will not be ready.

To clean it take the used instruments from out of the batist in which you have rolled them.

If you have opened the bag containing the catheter, scissors, and nozzle or that containing the nail brush and finger-stalls, you must disinfect all their contents whether

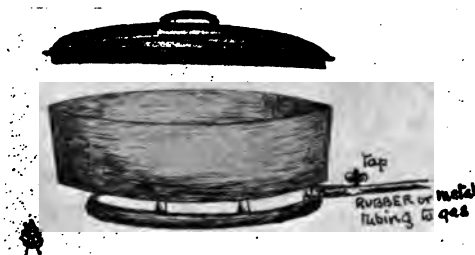


FIG. 36.—The Sterilizer.

you have used them or not, and the bag. I advise you to have spare sets of bags, which you boil and hang upside down until they are dry. Their insides will be "sterile," that is to say any microbes inside the bag will have been killed by boiling.

The Sterilizer.—The best sterilizer you can have at home is a small fish kettle which you put on to a gas stove. You should have a pair of forceps to pick the boiling things out of the sterilizer.

Sterilizing or Disinfecting Instruments.—Fill the fish kettle a quarter to half full of water, add some washing soda to the water—for a soda solution prevents steel instruments from rusting—and light the gas. Scrub the scissors

with a scrubbing brush, soap and cold water, clean the catheter and vaginal nozzle similarly and run a stream of water through them. Take the nail brush you have used and the gloves or finger-stalls, wash them well with soap and water and turn gloves and finger-stalls inside out. Take the soap and soap dish you have used. Wash off the outer layer of soap, clean the soap tin inside and out.

The water will now be boiling. Put the scissors, vaginal nozzle, the catheter, the nail brush, several rubber finger-stalls or a pair of rubber gloves and the soap dish into it and boil them for five full minutes.

Pick the catheter, vaginal nozzle and scissors out of the boiling water with the forceps and let the water run off. They dry by their own heat, as you hold them. Put them into a clean, dry batist bag. Pick out the finger-stalls or gloves, shake them to get rid of water and drop them into the other batist bag. Pick out the nail brush, shake it and drop it into the same bag.

Now pour the soda solution out of the sterilizer and replace it with plain water and boil this. You will find soda solution tends to spoil batist.

Whilst it is boiling take the used batist bags, the batist apron and the batist cloth, wash them with soap and water inside and out, boil them, and hang them up to dry.

If you have used the Rotunda douche, run clean water through it, wash the bag you keep it in and the tubing with soap and water, boil the douche for five minutes in its bag and hang it upside down to dry.

Wash and boil your penny towels and put two clean ones in the bag.

Put the dry batist bags back into your bag. The Rotunda douche in the bag, batist apron and cloth and towels you should leave hanging until they are dry, which will not take long, especially if you have a fire or hot cupboard.

If you have used the Higginson's syringe, wash it last and squirt plenty of soap and water through it. Boiling the syringe spoils it.

If you get a second call now that your things are clean,

all you have to do is to pack your kit. You are not delayed by having to clean them.

Fortnightly Cleaning of Kit.—I recommend you once a fortnight to undertake a rigorous cleaning of your kit, but if you are not attending many cases once a month is sufficient. This thorough cleansing you *must* also undertake, if you are attending a case that has blood poisoning or other infectious disease. As you will have a doctor in such a case you can ask his advice as to how you should disinfect yourself and your apparatus. I tell you now the advice I would personally give you.

I would advise you to clean your instruments and appliances as I have already told you, only you should boil the things for half an hour instead of five minutes. You should take out the inside lining of the bag and boil that for half an hour. You should then take a bowl of 1-500 corrosive sublimate solution (two tabloids to the pint), soak several large bits of cotton-wool in it for ten minutes and wipe over the outside as well as the inside of the leather bag. Take the bottles and wipe them thoroughly with this wool soaked in corrosive sublimate. Stand the thermometer case and thermometer in it. Finally fill the Higginson's syringe and let that soak in it for several hours.

You should take a hot bath and pay especial attention to washing your hair. After the bath put on fresh clothing. If you use a Samway's tin scrub it inside and out with soap and water, wash away the soap and swab it inside and out with corrosive sublimate solution (1-500).

If your last patient had severe blood poisoning, I would even advise you after cleaning the bag to let it dry and then to put it in the oven for half an hour at such a heat that breadcrumbs on the floor of the oven are faintly browned. Greater heat will destroy the leather. You should get a new packet of binder pins, new gamgee tissue, linen and wool, and destroy the old. Send your infected clothing to the Sanitary Authority of the District to be disinfected.

Rules of the Midwives Board.—"Whenever a midwife has

been in attendance upon a patient suffering from puerperal fever, or from any illness supposed to be infectious, she must disinfect herself and all her instruments and other appliances, to the satisfaction of the Local Supervising Authority, and must have her clothing thoroughly disinfected before going to another labour. Unless otherwise directed by the Local Supervising Authority, all washable clothing should be boiled, and other clothing should be sent to be disinfected by the Local Sanitary Authority."

Recapitulation.—You may think all this bother about cleanliness is not quite necessary, but I assure you it is in this matter of cleanliness that you must have absolute faith in science. So tiny are the microbes, that you cannot tell where they are; you only know that unless you take every possible precaution, the day will come when one or more of your patients will pay the penalty of your carelessness either by death or by a long and painful illness.

Therefore a brief recapitulation of this supremely important subject is necessary.

The disinfectants used are: (1) boiling; (2) soap and water; (3) chemical disinfectants.

You use **BOILING** to disinfect your instruments, nail brush, finger-stalls, or rubber gloves, the soap dish, batist bags, apron and cloth, the towels and Rotunda douche and lining of the bag; also for your clothes, if they can be boiled.

You use **SOAP AND WATER** for all the above, previous to boiling them. Soap and water is the best mechanical means of removing dirt and microbes. You use it for your hands, forearms, and the patient's vulva and neighbouring parts, as will be more fully explained. You use it to clean the Higginson's syringe inside and out, for scrubbing a Samways tin or douche can, if you use them.

You also use it in the bath and to cleanse the hair, if you have been to a septic patient.

You use **CHEMICAL DISINFECTANTS** after soap for your hands and arms. You put nail brush, gloves and instruments in them, when at a case. You use them

to clean the bag, the bottles, the thermometer and case, and the Higginson's syringe.

DRY HEAT in the oven is used to sterilize the bag after a septic case. In these several ways science has found out how we may guard against and destroy our invisible and myriad foes, the microbes.

CHAPTER X

THE CONDUCTION OF NORMAL LABOUR

PRELIMINARY

Introduction.—The majority of women pass through the period of pregnancy without trouble, therefore it is better, I think, that we should proceed to the conduction of normal labour and the normal puerperium, before we consider the various ailments and illnesses that may beset a pregnant woman. It is in the treatment of a normal labour and lying-in, that a midwife has most practice and responsibility. In all abnormalities, the advisability of sending for a medical man arises. But normal cases of labour are frequently cared for by a midwife only, and it is with such cases that I now intend to deal, so that you may learn what you may do to help a woman in childbirth, and how by your cleanliness and skill you can insure a healthy lying-in.

What is Normal Labour ?—The child presents by the vertex. Both child and the afterbirth are delivered without complications within twenty-four hours of the commencement of labour. In about nine cases out of ten the babies are born in this straightforward manner.

Preparations for Normal Labour.—Your patient will engage you to attend her before labour starts, so that you have time to prepare for labour some days before it begins. You ask her to get certain things that will be required, and, if you can, you prepare the room.

Articles Required for Labour.—In addition to your own apparatus, certain things will be wanted that the patient herself buys. If she has had children she will know what to get, but if she is carrying her first child she will expect

you to tell her what to get. Here is a list of her requirements.

2 mackintosh sheets for the bed, a yard and a half by a yard.

12 sanitary woodwool towels.

2 large woodwool sheets.

Gamgee tissue and absorbent cotton-wool.

3 enamelled basins, holding a pint each.

- 4 binders. A binder should be a yard and a quarter long and three-quarters of a yard wide and made of strong roller towel material. Women in good position usually prefer the ready-made binders with straps and buckles obtained from surgical instrument makers.

Of course, if the patient is poor, she will not be able to buy these things. We will deal later with attendance on the very poor.

The Lying-in Room.—If you have any voice in the selection of the room in which the patient is going to be confined, the following are the points to which you should pay attention. It must be a light, well-ventilated room, with a south-west aspect, so that there is plenty of sun. Quiet is another essential. There must be a fireplace, and the fire must be laid, so that you can light it at once. For the rest, dust is the great thing you have to avoid, for in dust many microbes are found, and therefore the more dust there is in the room, the more likelihood is there of microbes reaching the patient.

Curtains, ornaments, pictures, heavy furniture, and carpets, all harbour dust. For this reason curtains that can be cleaned are preferable. Ornaments and pictures must be dusted with a wet rag. Dusting with a dry duster merely stirs up the dust, which then settles in another part of the room. Cumbersome and heavy furniture should be moved from the room. The carpet is swept with damp tea leaves and the area round the bed covered with linoleum, if possible. Remember then that a lying-in room should be bright, sunny, airy, quiet and free of dust.

The Bed.—It is much more convenient to nurse a patient in a single bed than in a double one. A single bed that

projects into the room so that you can get on either side is best, and another point to remember is that you should have the bed so that when the patient lies on her left side to be delivered her buttocks will be turned to the light and you will be able to see what you are doing. A firm surface to the bed such as is supplied by a horsehair mattress is a great advantage. Spring mattresses frequently sag in the middle, which makes the handling of a patient difficult, especially with a large bed. You can overcome this by putting boards under the bed. The majority of puerperiums are so healthy that this undertaking is rather superfluous. On the other hand feather beds are an abomination you must not allow.

The arrangement of the bed you will make when your patient is in labour. These preparations that I have just described are those you make before the patient falls into labour. We now go on to consider actual attendance on a woman who either is, or thinks she is, in labour.

Attendance on a Normal Case of Labour.—When the message comes for you, go at once. It is very annoying, from the doctor's and midwife's point of view, that it is so difficult to tell when the baby will be born. You will often have your time wasted by hurrying to a case perhaps two or three days before the baby is born. Still we all have to put up with this waste of time, needless hurry, and alarm. But it should never prevent us from answering the call at once, for you will come across cases when your timely arrival will save both the mother and the child.

How to tell if the Patient is in Labour.—Before you get the room, the bed, and the patient ready for delivery, it is well to assure yourself that the patient is in labour. Primiparae are especially apt to call you before they are in labour.

The signs that labour has set in are four : (1) the contractions of the uterus are painful and the pain is usually in the hollow of the back ; (2) the head in a multipara is fixed between the pains, that is to say you are unable to move it from side to side with any freedom ; (3) the show ; (4) the opening of the internal os.

1. **The Pains.**—The uterus contracts at intervals

throughout pregnancy, but as these contractions are not painful, the woman is not conscious of them. The contractions of labour pull open the internal and external os, and the opening of the cervix causes pain in the hollow of the back. Hence the contractions of labour, which give the patient actual pain, are popularly known as "the pains." The transition from the painless to the painful state may be abrupt or gradual. Usually it is gradual, and the true pains are preceded by vague, inconstant pains in the pit of the stomach, known as the FALSE PAINS. The false pains not infrequently occupy the twenty-four hours preceding the true onset of labour. The true pains are characterized by the regular intervals between them and the pain being in the back, not in the pit of the stomach.

How to distinguish a True Pain.—You must tell your patient to lie down on the bed with her abdomen exposed. Lay your hands on her abdomen and talk to her to distract her attention. You will notice the uterus harden with a contraction and you notice at the same time that she frowns or winces with pain. If she tells you that the pain is on, and it is in her back, she is almost certainly in labour; in fact from a practical point of view she is in labour, for exceptions, though they occur, are very uncommon.

If, however, you ask her a leading question, that is to say when you feel the uterus harden, if you say "Have you a pain in your back?" she will probably say "yes," whether she had a proper labour pain or not, and you will be misled.

2. The Fixing of the Head between the Pains in a Multipara.—In telling you about the mechanism of labour, you remember the head flexed and descended into the brim of the pelvis. You also remember my description of the lower uterine segment as that part of the uterus which was below the greatest breadth and width of the head and therefore had to expand to allow the head to pass. This descent of the head leads to the expansion of the lower uterine segment. If the head does not descend into the brim, it does not reach the lower uterine segment, which lies a little below the level of the brim.

When the head does enter the brim the lower uterine segment is stretched by and fits tightly over it much as the finger-stall of a new glove is stretched by and fits tightly over the finger you gradually push into it. It is this tight fit of the muscle of the lower uterine segment over the head, this firm grasp of the descending head, that keeps the head fixed, that is to say between the pains you cannot push it from side to side. The pains push the head into the lower uterine segment and the grasp of the stretched



FIG. 37.—Diagram to show the level of the lower uterine segment.



FIG. 38.

Diagram to show the fixing of the head by the lower uterine segment.

muscle holds it still between the pains. You must only pay attention to this fixing of the head *between* the pains. The uterus pushes the child's head down when it contracts and holds it thus whilst the contraction lasts. The head is therefore temporarily "fixed," but this is not true fixing.

Fixing of the head in a primipara occurs some three weeks before labour starts, for slight flexion and descent with expansion of the lower uterine segment, occur early in a primipara. Therefore all you can tell by fixing of the child's head in a primipara is that she will have her baby sometime within three weeks.

Fixing of the head between the pains in a multipara in practically all cases means that labour has started.

But before leaving this subject of fixing of the head, you must carefully remember that if the head (as in brow presentation) cannot enter the brim, or if the child is transverse or a breech, the *head cannot and does not fix, although labour is in progress*. This is a very important point, this non-fixation of the head in the definite presence of labour, to which I shall constantly return.

The method of telling whether the head is fixed will be shortly described under Pawlik's grip.

3. **The Show.**—Before the child is born, the vagina and cervix secrete slimy mucus, which acts as a lubricant. Again, when the internal os dilates the membranes which are

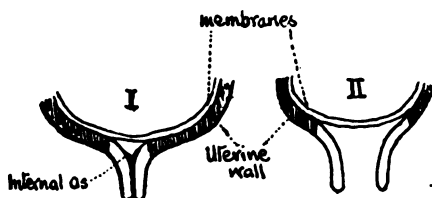


FIG. 39.—Diagram to show detachment of membranes when the os opens.

attached to the uterine wall must get detached around the dilating os or break as it dilates. They do actually get detached and in doing so there is a little blood lost. This blood mixes with the slimy mucus that lubricates the vagina and the two make up the "show," and you see that the show occurs only because labour has really started.

To see the show turn the woman on her left side, separate her thighs, and look at the vulva. If you see bloody slime hanging about the vulva and vulval hair you can be sure labour has started. Absence of the show, however, does not mean that she is not in labour.

4. **The Opening of the Internal Os.**—If you are not sure whether the patient is in labour you will have to make a vaginal examination to feel if the internal os is dilated or not. Probably at all cases which you attend alone, you will make this vaginal examination unless it is clear that the baby will soon be born. There is no particular harm in

your doing so provided you are scrupulously clean. When you make the vaginal examination, there are more things you should attempt to discover in a normal case than merely the size of the internal os. It seems to me best therefore to give you in detail the method of making a vaginal examination and what you feel by so doing.

The Vulva and its Neighbourhood.—As you have to cleanse



FIG. 40.—The vulva and its neighbourhood.

these parts it is necessary that you should know a little more about the vulva than that it is the mouth of the vaginal canal.

For the purposes of description we will suppose the woman is on her back with the knees flexed and separated. Over the pubic bone you see a pad of fat covered by skin and hair known as the MONS VENERIS. Running down from

the mons veneris on either side of the vulva are two thick folds of skin and tissue covered with hair, which make two lips to the vagina. They are known as the LABIA MAJORA (*labium* — Latin, a lip) or greater lips. Towards the back passage they are not so definite and are in fact lost in a dense wedge of tissue, which separates the vulva from the anus and is known as the PERINEUM. Now, if you pull aside the labia majora, you will see two small lips or folds again form inner boundaries of the vagina. They are known as the LABIA MINORA. The labia minora meet at a little rod-shaped body that lies in the middle line at the upper part of the vulva and is known as the CLITORIS.

The labia minora are very important. If you look at them you will see their outer surface is formed by skin, but their inner surfaces, which touch each other and close over the opening of the vagina, look smooth and shiny. They are, in fact, lined by a tissue that is a transition between mucous membrane and skin. These surfaces are known as the MUCO-CUTANEOUS SURFACES OF THE LABIA MINORA, and they are of great importance in midwifery. Many microbes dangerous to the mother are found on them, and therefore upon the careful cleansing of the muco-cutaneous surfaces of the labia minora her health when lying-in will largely depend, for if they are not clean your fingers when making a vaginal examination brush past them and carry their microbes up to the cervix. This is their importance, and this must ever be in your mind when you make vaginal examinations.

Separating the labia minora, you see they make a sharp edge of thin skin, which forms the posterior or lower border of the vaginal orifice and is known as the FOURCHETTE. The fourchette nearly always gets torn in primiparæ when the child's head is being born. Above and in front you will see the ENTRANCE OF THE URETHRA, through which the urine passes from the bladder. It is situated in the middle line half-way between the clitoris and the entrance to the vagina. Finally the entrance to the vagina is rimmed by a torn and irregular border of

membrane, the remnants of the HYMEN, a membrane which surrounds and almost closes over the entrance in a virgin.

If you carefully look at the figure on p. 83 and then examine the patients in labour in hospital, you will soon be able to identify all these named structures.

Natural Protection of the Uterus from Dangerous Microbes.—The vagina is naturally free of dangerous microbes. Dangerous microbes are only to be found on the lips of the vulva. In fact the vagina is normally an actual death trap to dangerous microbes, for some harmless microbes live there naturally, and secrete an acid which kills any dangerous microbes that enter. These acid microbes do not live in the cervix. Consequently if you make a vaginal examination with unclean fingers past unclean labia minora, you push dangerous microbes past their enemies, the acid microbes, to the cervix, where they can live. The cervical canal before labour is corked by a plug of mucus, called the OPERCULUM, but this protective plug is discharged at the beginning of labour. The pregnant uterus is thus protected by the acid microbes of the vagina and the operculum.

How to Cleanse the Patient and your own Hands before Making a Vaginal Examination.—This is so important that a detailed description is essential. Dirty vaginal examinations by untaught or careless midwives still do incalculable harm to unfortunate women under their care.

You will want three basins. You cannot be sure that any basin or jug is clean. There is often a lot of dirt and dust at the bottom of a jug. To insure cleanliness, therefore, scrub the basins inside and out with soap and water and fill them with fresh water from the tap.

One basin is for soap and water, the second for plain water in which you rinse away the soap, the third is for corrosive sublimate solution (1-1,000).

You should have a kettle on the fire and a saucepan as well, in which the water is boiling.

You will also want two or three small scrubbed basins. Use the enamelled iron basins you recommended the

patient to get, or some earthenware dishes you can find in the kitchen.

Fill one with some bits of soap from which you have washed the outer surface, some boiling water and a little lysol and eighteen wipes made by rolling up pieces of clean cotton-wool the size of the top of your thumb.

Fill the other with corrosive sublimate solution (1-1,000) (one tabloid to a pint of water) and eighteen wipes of cotton-wool.

Stand these two basins on a chair near the patient.

You now take the batist bag in which you carry the nail brush and rubber finger-stalls, which you remember you sterilized when cleaning your kit. For safety's sake I advise you to sink the bag and boil them again in the saucepan for five minutes, and so kill any microbes that might by chance have got into the bag since you sterilized it. Upset the contents of the bag without touching them into the basin of corrosive sublimate.

Take your piece of soap, wash off its outer surface, and drop into the basin for soap and water.

Roll your sleeves up above your elbow.

You have now clean basins, clean jugs, clean water, clean soap, a boiled scrubbing brush for washing your hands, and wipes for cleaning the vulva.

Get the patient next to turn on her left side with her hips well to the edge of the bed so that you will easily be able to clean the vulva.

Put a piece of batist or mackintosh under her to prevent wetting her clothes and have a small bath projecting from under the bed into which you can throw the used wipes.

Pick the brush out of the corrosive sublimate and proceed to scrub your hands with soap and water. If the water is hard a little lysol added to it will make it soft. In the labour wards of the Rotunda we have a sand glass which runs through in four minutes. Every one has to wash their hands and forearms with soap and water for this four minutes, and the nurses in the labour ward will agree with me that four minutes seems a very

long time. We then wash off the soap in a stream of tap water, and some one turns the glass and we steep our hands and wrists in a basin of corrosive sublimate (1-1,000) whilst one-third of the sand runs out, that is for $1\frac{1}{2}$ minutes.

You should do the same in your private practice. At first your hands may get sore with so much washing, but if at bedtime, when you have finished the day, you make a point of rubbing lanoline over your hands you will keep your skin soft.

There are several points about scrubbing the hands. Pay special attention to the clefts between the fingers, the knuckles and the finger nails. The finger nails are especially difficult to clean, and all midwives are expected to keep their finger nails cut short, so that when she scrubs them they are easily cleaned. The sides of the wrists are also parts you are apt to forget. Personally I always wash in a routine method, and I advise you to adopt a routine too. I start by washing the palm, then the clefts between the fingers, the fronts of the fingers, the sides of the hands, the sides of the fingers, the clefts from behind, the fingers from behind, the sides of the fingers from behind, the back of the hand, the knuckles, the finger tips, the thumb, the wrist and lastly the forearm.

Rinse the soap well off in basin No. 2. You must get rid of the soap, for soap destroys the disinfecting power of the corrosive sublimate solution. Finally soak your hands and wrists in the corrosive sublimate solution for a minute to a minute and a half and splash it over your forearms.

In this way all microbes that were living on your hands are, as far as possible, scrubbed off or killed.

Cleansing the Vulva.—With clean hands you now proceed to clean the vulva. Take one of the cotton-wool wipes well saturated with soap and wipe over the vulva with firm pressure, wiping from the mons veneris to the anus, wiping once from above down and once only with each wipe. Use nine wipes in this way. Then separate the labia minora with the fingers and thumb of the left

hand and wipe the MUCO-CUTANEOUS SURFACES with the remaining nine wipes from above down. Wipe away the soap with the first six wipes in corrosive sublimate solution. Then use six wipes soaked in corrosive sublimate for the outside vulva and five for the muco-cutaneous surfaces, wiping from above down and using a wipe once only, throwing it after use into the bath. Place the last wipe between the muco-cutaneous surfaces of the labia minora and leave it there.

Rewashing Hands. The use of Finger-stalls or Gloves.—You have slightly contaminated your hands whilst cleansing the vulva, therefore rewash your hands, scrubbing them in the same basin by the same routine. Wash off the soap and soak the hands in corrosive sublimate solution. Now put rubber finger-stalls on to the index and middle fingers of the right hand. Finger-stalls or gloves are always used by nurses in the Rotunda. Their advantage is that you can boil them and ensure all microbes being killed. Their disadvantage is that you cannot be so sure as to what you feel, until you have practice with them. I leave it to you, whether you use them or not in private work, your decision depending on the amount of skill and self-reliance you gain during your training in hospital. There is no particular danger in making a vaginal examination without a glove or finger-stalls provided you are quite clean, but if you always use gloves when touching the vulva or examining the vagina, your hands never get soiled, and you are less likely to contaminate your patients.

Passing the Fingers into the Vagina.—Remove the cotton-wool wipe. Lift the upper labium minus right up as the patient lies on her left side with the fingers of your left hand and so make the muco-cutaneous surfaces gape. Pass the index and middle finger of your right hand into the middle of the vaginal orifice so as to avoid, as far as possible, touching the gaping surfaces.

Another good way of opening the labia minora is to pass your left hand from the patient's abdomen between her thighs and open the labia with your finger and thumb, as you see in the figure.

What to Feel in a Normal Case.—You discover : (1) the show ; (2) the size of the os ; (3) the condition of the



FIG. 41.—Opening the vulva to make a vaginal examination.

membranes, whether ruptured or unruptured ; (4) the presenting part.

THE SHOW.—In most cases, when labour has begun, the blood-stained mucus of the show lubricates your vaginal fingers.

THE SIZE OF THE OS.—You remember when we were dealing with the opening of the cervix (p. 37) that I told you the cervix flattened out before the os externum opened in the primipara, but that in a multipara the os externum opened before the cervix flattened out. The result is that in a primipara your finger does not enter a cervical canal, but feels a ring when the os is opening, whereas in a multipara your finger does enter a short canal in the early stages of dilatation.

You feel an opening ringed by the edge of the cervix when the os is dilating and through this orifice in a normal case you feel the child's head. Make out

the edge of the os as far round as you can. Sometimes you will have great difficulty in reaching the os at all, for it is in some cases high up in the posterior part of the vagina.

You can in these cases reach the cervix behind by pushing your two fingers well up into the vagina.

When you feel the edge of the os, run your fingers round it and estimate its size. You reckon its size by the number of fingers, placed side by side, that you think you could pass through it. Thus you have a "one-finger os," when you could pass only one finger; a "two-finger os," when you pass two fingers side by side through it, and so on.

A FULLY DILATED OS is one that you cannot feel at all because it is above the greatest width of the head, which has passed through it.

Sometimes the anterior lip of the cervix is caught between the child's head and the pubic bone, although the rest of the os is above the greatest width of the head. In

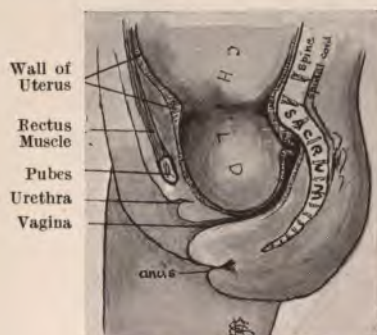


FIG. 42.

Os pulled up posteriorly. Anterior lip of the cervix stretched and thin.

such a case by pushing the caught anterior lip up over the head you make the os fully dilated.

THE MEMBRANES.—The fœtus floats in the liquor amnii contained in the bag of foetal membranes formed by the amnion and chorion, which are so closely apposed as to practically form one membrane. It is the bulging of this bag of membranes through the os that helps to open it. When the os is fully dilated, or nearly so, the membranes break and some water escapes, for they are no longer needed when the os is opened. Sometimes they break earlier, and this is a disadvantage, for their power of dilating the os by the evenly distributed pressure of fluid is the best for the purpose.

You can tell whether the membranes are ruptured or not by feeling during a pain. The uterus pushes its contents down during a pain and the unbroken membranes bulge. In a normal case they feel like a convex watch glass and form a tense fluid pad, which comes between your fingers and the fetal head. When the pain has passed off, it is more difficult to feel the membranes, especially

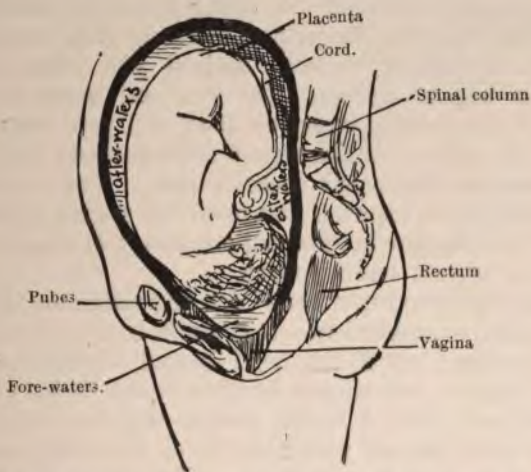


FIG. 43.—Diagram to show the separation of the fore-waters from the after-waters before rupture of the membranes.

when wearing a rubber glove, for they only form a thin relaxed skin over the child's head.

The waters in the bag of membranes in front of the presenting part are known as the fore-waters. They are shut off in a normal vertex case from the main body of the waters, known as the after-waters, by the close fit of the lower uterine segment to the foetal head.

THE PRESENTING PART.—You remember the presenting part of the foetus is the most advanced part, the part you feel to be lowest when you make a vaginal examination.

In a normal case you feel the head. It feels very hard, and if the membranes are ruptured you may feel the

child's hair. You feel the overlapping of the bones at a suture as a long ridge. If you feel either hair or suture you may be sure it is the head. Unless you feel these, the presenting part may possibly be a breech, for this also feels very hard. In nearly all cases you should feel a suture, but sometimes when labour has been long and the membranes are broken your sense of touch is interfered with by the CAPUT SUCCEDANEUM (p.64). It is a sign that the head is being tightly squeezed. It forms a pad of fluid between the head and your finger and obscures your touch like the unbroken bag of waters. Indeed you may mistake it for the bag of waters. But you can move the relaxed skin of membranes over the head and you cannot do this with the skin over the caput succedaneum. Again, you feel hair on the caput succedaneum. You can often see the hair on the caput, if you open the vagina by separating your two fingers in the vagina, and you may thus know that the waters have broken.

DIAGNOSIS OF POSITION.—You can diagnose the position by vaginal examination. It is better to do so by abdominal examination, but if the head is well within the reach of your fingers, you should be able to do it by vaginal examination. But I advise you to diagnose by abdominal rather than vaginal palpation, so as to avoid prolonged or needless vaginal examinations. The clue to the position in a vertex presentation is the position of the fontanelles. The posterior fontanelle you distinguish as the meeting-place of three ridges or sutures, the anterior fontanelle as the meeting-place of four ridges or sutures. There is no membranous interspace, for this space is closed by the squeezing together of the head bones during labour.

The posterior fontanelle is forwards and to the left in Vertex I, forwards and to the right in Vertex II, backwards and to the right in Vertex III, backwards and to the left in Vertex IV. The anterior fontanelle is of course the reverse of these. When the head is in the canal rotation to the front has occurred, and in both Vertex I and Vertex II you feel the posterior fontanelle in front in the middle line.

In Vertex I and II, owing to the flexion of the head, the posterior fontanelle is low and easily reached, the anterior fontanelle high up behind and less easy to reach. In Vertex III and IV with deficient flexion the anterior fontanelle in front is felt with equal and perhaps greater ease than the posterior fontanelle. The ease then with which you feel the anterior fontanelle is a guide to the amount of flexion of the head.

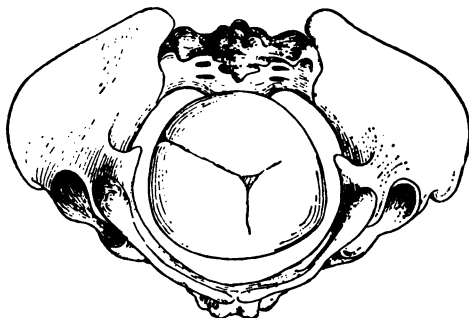


FIG. 44.

Vertex II as felt by vaginal examination.

ADVANCE OF THE HEAD.—Lastly, you should notice the advance of the head during a pain, and for this reason and to feel the bag of membranes I advise you to begin to make your vaginal examination at the beginning of a pain. If the membranes are not broken or the os small you need not bother about the advance of the head.



FIG. 45.

Vertex IV as felt by vaginal examination.

But if the os is dilated fully, or nearly so, and the membranes are broken, the head should advance with the pain and it should recede or you should be able to push it back between the pains. If not, the head is jammed, and you will probably require a doctor to effect delivery.

Significance of the Knowledge you have gained by Vaginal Examination.—The show, if present, tells you the patient is in labour, but its absence does not mean necessarily that she is not in labour.

The size of the os will tell whether labour has begun, or the stage of labour. A "one-finger os" in a primipara means that she is in labour, but the fact that you can get one finger through the internal os in a multipara is not a certain, but only a very probable, sign that labour has started. The first stage is the time from the beginning of labour to the full dilatation of the os. Therefore if the os is not fully dilated, the patient is in the first stage of labour, and its size will give you some indication as to how far advanced she is in the first stage. If the os is fully dilated the patient is in the second stage, which lasts from full dilatation to the delivery of the child.

Feeling a head is reassuring. If you feel the head with two fingers in the vagina, you can be happy about your patient, for the baby is certainly lying in a good position.

If you feel a large caput and the head does not advance with the good pains, the head is certainly very tightly squeezed, and the case is one for a doctor; but with these cases I will deal later.

If the head is in the brim you can diagnose the position, but if the head is in the canal rotation to the front has taken place, and you can only tell that the case is Vertex I or II or Vertex III or IV, but you cannot tell between Vertex I and II or between Vertex III and IV. You can, however, do so by abdominal palpation, with which I shall now deal.

Your Patient is almost certainly in Labour:—

1. If the pains are in the back, are intermittent, and occur with hardening of the uterus.
2. If the pains are as in (1) and there is a show.
3. If in a multipara there are pains and the head is fixed.
4. If the internal os admits one finger.

CHAPTER XI

THE CONDUCTION OF NORMAL LABOUR

(continued)

ABDOMINAL PALPATION

YOU have now decided whether the patient is, or is not, in labour. Your next business, if the patient is in labour, is to discover the lie and position of the child by abdominal palpation and to listen for the foetal heart.

ABDOMINAL EXAMINATION

Ask your patient to lie on her back. Take off your glove or finger-stalls. Wash your hands briefly in warm water, dry them on a towel.

The Bladder.—First discover if her bladder is full, for if so it obscures palpation. You can see the convex outline of a full bladder bulging above the pubes. If it is full, ask her to pass her water, or pass a catheter if you cannot get her to pass her water.

Passing the Catheter.—To do this, wipe over the mouth of the urethra with a cotton-wool wipe, wrung out in corrosive sublimate solution (1–1,000). Opening the lips of the vulva so as to expose the mouth of the urethra with the fingers of your left hand, you pass the female metal catheter (sterilized by boiling for five minutes) with your right hand. You hold it at the further end, so as not to touch the part of the catheter that enters the bladder, nor must you let it touch anything but the cleansed urethral orifice. The catheter is curved, so that it will pass under the arch of the pubes into the bladder, and this you will find it readily does unless the child's head is nearly born. If you find

difficulty you should desist rather than use force, but you will seldom have difficulty, unless, as I say, you try to pass it when the child's head is so low that it will soon be born.

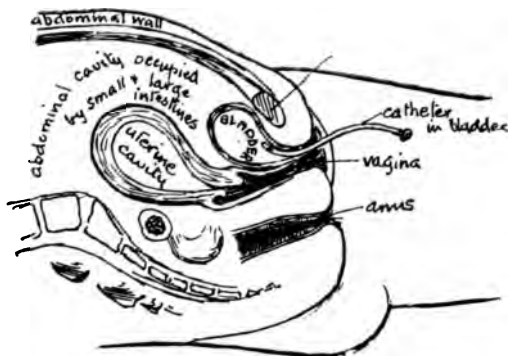


FIG. 46.—Diagram of catheter in bladder.

Pass it between the pains. If you pass it into the vagina by mistake, reboil it before you pass it into the urethra. When the urine has ceased to flow, withdraw it slowly, pressing with your left hand over the abdomen above the pubes so as to completely empty the bladder.

Palpation.—Warm your hands and place the palms flat on the abdomen. Gently dip the pads of your finger tips down on to the uterus. Gentleness accustoms the abdominal muscles to the play of the fingers, which is called palpation. For the sake of description and method, four palpations are described : (1) fundal palpation, the palpation of the foetal parts at the fundus ; (2) umbilical palpation, the palpation of the foetal parts in the neighbourhood of and below the umbilicus ; (3) Pawlik's grip, a special grip for the presenting part ; (4) pelvic palpation, by which you feel for any foetal part that has sunk into the pelvis.

Fundal and Umbilical Palpations.—Sit on the side of the bed facing the patient. Sit comfortably so that your attention may be devoted to what you feel. Fold some clothes over the patient's chest, so as to prevent her

watching your hands. Talk to her and take away her attention. Otherwise she may harden her abdominal muscles and make her abdomen so rigid that you can feel nothing.

Then gently palpate the foetus, always between the pains, when the uterine wall is relaxed. In a normal vertex you will find the breech at the fundus. It feels round and firm. You tell it is the breech, because it is



FIG. 47.—Fundal and umbilical palpation.

continuous with the back, and when you move the breech from side to side, the back moves with it. Were it the head, it would be separated from the back by the groove of the neck and owing to presence of the neck when you moved it from side to side, the back would not move with it.

On one side you may feel the knobs of the feet and you may actually feel a kick and the mother notice it at the same time. If the kick or foetal movement is noticed in the region of the fundus the foetal breech is there too.

As you pass your hands down on one side in either

Vertex I and II, you will feel the *smooth resisting surface* of the child's back continuous with the breech, on the other side the limbs.

You can often make the back more prominent and easy to feel by pressing on the breech with one hand and feeling the arched back with the other. Or again, you can press



FIG. 48.—The foetus as felt by abdominal palpation. Vertex II.

down on one side of the middle line with your flattened hand and you will displace the child to the other side into a smaller space and this makes the back easier to feel. The back on one side, the limbs on the other, give the clue to the lie and position. In Vertex I the back is forwards and to the left. In Vertex II forwards and to the right.

In Vertex III and IV, the back is behind, and therefore more difficult to feel. You may feel it right at the side of

the uterus, or you may not feel it at all. In palpating these cases your fingers, instead of meeting the resisting back in front, dip into the hollow made by the flexed body and feel the knobs of the limbs. If you cross your arms on your chest, flex your thighs on your abdomen and bend forward, you will understand how this is. These hollows



FIG. 49.—The foetus as felt by abdominal palpation. Vertex III.

and knobby limbs to the front are altogether different to the feel of the smooth back to the front.

Pawlik's Grip (pronounced Pavlik).—This is a very useful grip. The illustration shows how you catch the presenting head with your fingers and thumb. Sit facing your patient as before. Sink your right thumb on one side of the head and your fingers on the other and gradually press them together until you feel the hard head in your grip. This is the grip by which you test fixing of the head.

You cannot move it from side to side between the pains if it is fixed.

The child's head is acutely flexed as it passes the pelvic brim into the pelvic cavity. The result of this is that the prominent forehead is felt higher up and more readily than the sloping and sunken occiput. Flex your own head and feel it, and you will see that this is so.

Hence, by Pawlik's grip you can tell how much the



FIG. 50.—Pawlik's grip.

foetal head is flexed and can confirm the diagnosis of the position, for you feel the forehead to one or other side. You can also tell how much of the head is still above the brim and how much has passed the brim, and thus have an excellent means of watching the descent of the head and progress of labour without making vaginal examinations. If the whole head has entered the pelvic cavity, your fingers only dip into the groove formed by the neck and you would think there was no definite presenting part, were it not for pelvic palpation.

Pelvic Palpation.—To perform this, you must change your position. You sit or stand with your face to the patient's feet. Now press the extended fingers of your two hands gently but firmly down on either side of the pelvic cavity. You can feel the head in this way until it is almost down to the perineum. The forehead resists your fingers' advance and is more readily felt than the occiput, and so you get confirmation of the position. You can also watch



FIG. 51.—Pelvic palpation.

the progress of the child's head by noting how much it has sunk in the interval between two pelvic palpations.

Post-Anal Palpation.—Although this is not abdominal examination, yet it cannot well be separated from pelvic palpation. The woman turns on her left side. Between a pain you press your two fingers up between the coccyx and anus. If the head is low in the pelvic cavity you can feel it in this way. Thus either by pelvic palpation or post-anal palpation you can always feel the head, if it is in the pelvic canal.

Listening for the Foetal Heart.—To listen for the foetal heart, apply your ear directly with light pressure to the abdomen of the woman. You will hear it best over the back of the child, and this fact confirms your diagnosis of the position. It sounds like the rapid tick of a watch under a pillow. Count it, and you will find it beats between 120 and 160 times per minute. Hold the pulse of the mother whilst listening, lest you mistake her heart beat for the foetal heart.

The Patient's History.—Whilst you are palpating the woman you should talk to her and find out about her past health. Ask her whether she has been strong while carrying the child; when she was last unwell; whether she lost any blood during pregnancy, and if so, when. Find out exactly when labour started. If she is a multipara ask her about the ease or difficulty and length of previous labours. Be careful not to alarm her by injudicious questions.

The Pulse and Temperature.—Next take her pulse and temperature and make a note of them with the time when they were taken. In taking the pulse remember that it is often raised by nervousness. Feel the pulse for a little before counting, so that it may have a chance to quiet down.

Nature of the Pains.—Whilst you are examining your patient you should also notice the nature and frequency of the pains. In nervous patients, your presence sometimes drives away the pains for a time, so ask her what they were like and how frequent they were before you came.

The pains of the first stage, those that open the cervix to full dilatation, differ a little from those of the second stage, which push the child out through the parturient canal.

The pains are intermittent, coming and going at intervals, the length of which depends upon the progress of labour. In the beginning of labour they may only come about once in the hour or half-hour. As labour advances they become more frequent until, just before the birth of the child, contractions occur at intervals of two or three minutes.

The pains of the second stage differ from those in the

first in that they are accompanied by bearing down ; in other words, the patient, feeling there is something to be expelled, holds her breath, strains with her abdominal muscles and gets red in the face with the exertion.

The amount of pain felt, and the length and strength of the pains vary very much in different patients.

Difficulties and Value of Palpation.—You will not always be able to make out the position of the child or hear the foetal heart, but you will always be able to tell either by examining the abdomen or by making a vaginal examination that the head is presenting. If it has passed the pelvic brim and is fixed, you need not be nervous about the position. It matters very little what the position is as long as the head has entered the brim, and this is shown by its fixing and by your palpation or vaginal examination.

The account in this chapter and the last seems very long, but as a fact you can often, after some practice, make up your mind that the patient is in labour, the nature of the position, and progress of labour, as shown by the sinking of the head and the force and frequency of the pains in a few minutes.

Nor do I insist, by any means, on the order of examination as I have described it. You must suit the circumstances to the case, and this you will soon learn to do from experience. As a matter of fact, following the Rotunda teaching, I start with abdominal examination and often do not make a vaginal examination at all, but follow the entire progress of labour by Pawlik's, the pelvic and post-anal palpations, noticing also when the waters break and the strength and frequency of the pains.

I hope with practice you may sometimes feel competent to treat a normal case without making vaginal examinations, for if you acquire this skill, you do not submit your patient to the slight additional risk a vaginal examination entails.

Information now Gained.—You are now in possession of some very useful information with regard to your patient. You know whether she is full term and in labour. You

know that the child is alive and lying normally. You know how much the presenting head is flexed, and how much it has sunk into the pelvic cavity. If the pains have been strong, during your time with the patient, you may have noticed some advance in the head. You find out the frequency and strength of the pains. If you have made a vaginal examination, you know how large the os is and whether the waters have broken. You know whether the bladder and rectum are full, and you must remember that a full bladder or rectum are practically the only obstruction to a normal labour. You also know if the patient had a healthy pregnancy and whether her previous labours were easy or difficult, quick or slow, if she is a multipara.

Attendance with a Doctor.—You will, I expect, frequently attend a normal patient with a doctor. If you do so, he will himself tell you what he expects done. Many doctors do not like nurses to make vaginal examinations, therefore, if you do not know him and have not seen him before you were called to the case, do not make one.

Do all the rest that I have told you and write him a note yourself as to information you have gained and he will decide whether it is needful for him to come at once or not.

Make the same preparations as I described in the last chapter that he may be able to make a vaginal examination when he comes. Get plenty of hot and cold water, etc. Then prepare the patient's dress and bed, so that all may be ready on his arrival.

When can you Safely Leave the Patient?—You are attending the case yourself. Of course, if you are helping a doctor you must wait till he comes, otherwise ask for instructions.

It is very difficult sometimes to know when to stay and when to leave a patient. Sometimes a patient will have feeble niggling pains, and the baby may not be born for three or four days from the onset of labour. At other times a primipara will deliver herself in a few hours from the onset of labour.

In the majority of primiparæ the first stage lasts at least twelve hours, in multiparæ it averages about six hours.

Judge then, as to the strength and nature of the pains,

the time labour has already lasted and the history of the woman, for what has happened to a woman in one labour is likely to be repeated in another, for she has the same womb, nervous system, and pelvic structure. Judge also as to the descent of the head into the pelvis. Then apply these rules :—

1. Never leave a patient, whether primipara or multipara, in the second stage of labour.
2. Never leave a patient, whether multipara or primipara, whose waters have broken.
3. Never leave a multipara who is definitely in labour. If she gives a history of very slow previous labours and now has only niggling pains at long intervals, you can leave her for a short time, provided some one is with her and you do not go far away and leave your address.
4. You can leave a primipara in the first stage for a short time, if you do not go far away and leave your address, provided she has not been in labour long and the pains are not strong.

CHAPTER XII

THE CONDUCTION OF NORMAL LABOUR

(continued)

TREATMENT OF THE FIRST AND SECOND STAGES

The Stages of Labour.—You already know the stages of labour, but I repeat them here, for your treatment must be divided into that for the different stages.

THE FIRST STAGE is from the beginning of labour to the full dilatation of the os. Its duration averages six hours in a multipara and twelve hours in a primipara.

THE SECOND STAGE consists in the passage of the child through the parturient canal and its expulsion from the mother's body. Its duration averages about two hours in a primipara, but only about fifteen minutes in a multipara, for her parturient canal has been stretched and dilated by previous childbirth.

THE THIRD STAGE consists of the detachment of the afterbirth (the placenta and membranes) from the uterus and its expulsion from the mother's body. This stage in civilized women is hindered by the lying down position, and therefore the midwife has to help the expulsion of the afterbirth from the body.

TREATMENT OF FIRST STAGE

The description I give you of the conduction of normal labour you can carry out in the majority of cases, for you are usually called early and there is plenty of time. In some cases you are called just as the baby is being born, so that you have not time to make proper preparations for the comfort of the patient and for cleanliness.

If you are pressed for time let your preparations be for cleanliness, this is more important than the comfort of the patient.

Position of the Patient.—During the first stage the patient should walk about the room or sit in a chair, but she should not lie down, or go to bed, unless it is during the night, when she should try and sleep in bed between the pains.

Dress of the Patient.—The patient wears a nightdress, a flannel petticoat, and a dressing gown, stockings and bedroom slippers ; but details of dress you will arrange with her.

Ventilation of the Room.—There is no need for the room to be stuffy, although it is useful to have a fire on which you can boil water. Have the windows a little open, top and bottom, for fresh air.

Preparation of the Bed.—This is the arrangement of the bed, from below upwards, as taught at the Rotunda Hospital.

1. Hard mattress.

2. Blanket.

3. Sheet.

4. Mackintosh.

5. Drawsheet or woodwool sheet.

These are all tucked in under the mattress.

6. The binder laid out.

7. A second mackintosh overhanging the edge of the bed, so as to protect the underlying clothes.

8. Drawsheet, which must be loose and not fastened by safety pins.

The patient is confined on the drawsheet. After delivery she is washed and cleaned up. The drawsheet and mackintosh are then withdrawn and the patient lies on the binder and the woodwool sheet. The clothes that are to cover the woman depend on the temperature of the room. Pin their edges together with safety pins or binder pins. You can then lift them all at a time and your patient is quickly exposed, if there is need.

A valance to a bed should be removed.

Have a large tin bath under the edge of the bed, into which you can throw the used wipes, this will also prevent blood and fluid running from the bed on to the carpet.

You can put a piece of linoleum or drugget over the carpet to protect it.

Basins. Hot and Cold Water.—The preparation of these has already been given under preparations for a vaginal examination.

Attendance on the Poor.—In the houses of the poor you will not be able to make such careful preparations. Do as much as you can. Upon the piece of batist you carry in the bag the woman should lie when confined. It is better than brown paper. Take a clean penny newspaper and cover the table with it. It will be probably cleaner than the surface of the table. Be especially careful in scrubbing basins, jugs, or pails that are going to be used, both inside and out with soap and water and flush them well under a tap. Remember too that a large kettle is the cleanest receptacle from which to douche, if this is necessary at any stage of labour.

Douching before the Birth of the Child.—Douching before the birth of the child is only to be undertaken by you under one condition, namely when you see, find on your vaginal fingers, or get a history of, a yellow vaginal discharge, especially if accompanied by pain when the patient passed her water.

Under normal conditions the natural protection of the uterus, which I described on p. 85, is quite sufficient. This yellow discharge is a disease and an unnatural condition, and it is necessary that you should carefully cleanse the vagina before the birth of the child, both for the mother's sake and for the sake of the child, for the yellow matter gets into the child's eyes and gives them acute inflammation. In fact when a woman has a yellow vaginal discharge I strongly advise you to call in a doctor. The ordinary "whites" are of course of no moment. As, however, you will very rarely have to douche the vagina in normal labour, I have left the description of douching until we

come to the treatment of abortion and bleeding during pregnancy (see page 146).

The Rectum.—It is important that the rectum or lower end of the bowel should be empty during the second stage of labour. If not the descending head squeezes the motions out of the anus and they are apt to soil the vulva and give the patient blood poisoning, for myriads of dangerous microbes live in the motions, in fact, one scientist has reckoned that about 128,000 billion microbes are passed in the motions every day.

Therefore tell your patient to take a purge as soon as she feels the pains. She can take any medicine to which she is accustomed, but castor oil or a dose of salts act more quickly than pills.

If the bowels are opened before the end of the first stage, well and good; but I would advise you always to give a large soap and water enema well before the second stage in every case of labour.

Giving an Enema.—To do so you turn the patient on her left side, put a basin filled with warm soapy water on a chair near her, fill the Higginson's syringe, insert the bone nozzle into the anus and squeeze the bulb slowly twelve to twenty times, asking your patient to try and retain it a little time.

When you have finished, put the syringe into the basin and put them aside out of the way until labour is over, for you must not use the basin for any other purpose.

Bladder.—A full bladder and full rectum are the only true obstructions to normal labour, therefore the woman should pass her water frequently during the first stage; if she cannot, you must pass a catheter.

Food.—The patient may have her meals during the

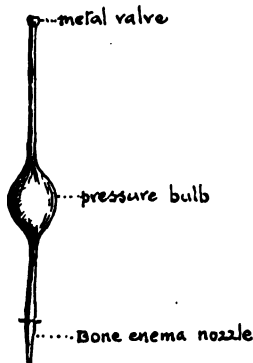


FIG. 52.
Higginson's syringe.

first stage, but she should take only light food such as toast, tea, and eggs. She should not have alcohol. Sometimes she is sick in the first stage ; more often she is sick in the second stage.

Pulse and Temperature.—Remember the pulse and temperature together are an excellent guide to the condition of the patient. If you think she is not progressing as she should, take her pulse and temperature (p. 102).

Vaginal Examinations.—Vaginal examinations are not necessary in the first stage unless you make one to assure yourself that everything is as you wish.

Abdominal Examinations.—You must learn to watch the advance of labour by making abdominal examinations and noticing the descent of the head. As the lower uterine segment and cervix expand, the head sinks into the pelvic brim, but the advance is not very great and you need not bother your patient, unless labour is slow, with abdominal examinations other than the first until the waters break.

Artificial Rupture of the Membranes.—I advise you never to rupture the membranes artificially in any case of labour, unless you see them bulging at the vulva or on making a vaginal examination for other purposes you find the head low down and the os fully dilated. If the child's head is born with the membranes over it, rupture them at once. This is the "caul," beloved of sailors, although unlucky for the child, which may be suffocated unless you rip the membranes open. If the membranes are not ruptured you can scratch through them with the point of a boiled hairpin during a pain. Have the bath ready to prevent the water they contain running on to the carpet.

General Attention.—This is practically all you can do to your patient. Pressing in the hollow of her back relieves the pain during an uterine contraction ; but do not do this at every pain, for it is unnecessary and will tire you out as well as the patient.

For the rest the confidence and happiness of the patient in your attention during the long first stage depends on your own character and hers, and the power you have

naturally, or acquire by training, of controlling others and adapting yourself to them.

TREATMENT OF THE SECOND STAGE

How to tell when the Second Stage has Begun.—It is not always easy to tell when the second stage has begun, but: (1) if in a normal case with the head fixed the waters break; (2) if the woman feels that she must bear down; (3) or if you notice the perineum and anus bulge with a pain (the so-called pressure signs) you treat the patient as practically in the second stage and do not make a vaginal examination to make sure that the os is fully dilated.

Is a Vaginal Examination Necessary when the Waters Break?—If the head was fixed, you need not make a vaginal examination. But if you could move the head at all from side to side you should do so, for fear of the umbilical cord slipping down with the rush of waters in front of or by the side of the head, a complication which I will deal with in a later chapter.

The Position for the Second Stage.—The patient goes to bed. She lies on her left side. This left lateral position leads to less exposure and is warmer for the patient than lying on the back. If the second stage is tedious, let her lie on her back, for this position may hasten delivery.

Dress.—The patient wears a nightdress, and if cold a flannel jacket and stockings.

Cleansing the Vulva.—Whether you make a vaginal examination or not, you should clean the vulva with your soapy swabs and corrosive sublimate wipes.

Any motion expressed from the anus by the descent of the head must be carefully wiped away, towards the back, so as to avoid approaching the vulva.

Preparation for Delivery.—You should have your thread for the child's cord in a small basin of corrosive sublimate solution, also clean scissors with which to cut the cord. You want clean strips of linen for wiping out the child's mouth and eyes, and hot water and a small tin

bath in case it is born in white asphyxia (p. 212). You should have the vaginal nozzle and Rotunda douche near at hand in their sterile batist bag and you should have a small table close to the bed. On this, if the need arises, you can stand a box, and on the box a jug. From the jug you can give a hot douche to stop the occasional severe bleeding there is after the birth of the child, which is known as post-partum (*post*—Latin, after; *partus*—Latin, delivery) hæmorrhage. It is a rare accident, but one so dangerous that you should be prepared for it. The jug should, for douching, be two to three feet above the bed. You should also put clean water into the two basins, but leave the corrosive sublimate basin.

Food.—It is best that she should have only water. She can have a little tea or milk and soda if she wishes it, but she is likely to be sick.

How to make the Patient Bear Down Effectively.—Proper bearing down greatly assists the speed with which the child is delivered and most women do not bear down properly.

To make your patient bear down put her on her left side. Tie a roller towel or rope to the foot end of the bed. Put a foot cushion or stool against the end of the bed, against which she can put her feet when she has a pain, and down the side of which she can put her legs when she has no pain and thus avoid cramp. When she has a pain, she flexes her knees and puts her feet against the cushion. She pulls hard with both hands on the roller towel, holding her breath. At the same time you press your knee or fist into her back, for this lessens her pain. You may also assist by pressing on the fundus during a pain, but sometimes this hurts her and you have to desist. You will often in this way bring about the birth of a baby, when others would wait for an hour or more, or give up hope of natural delivery. When you see the head just appearing between the opening lips of the vulva, do not let her bear down so hard, for the vulva and perineum must have time to stretch.

When you see the foetal head is beginning to come

through the vulva, the patient should cease from bearing down.

How to watch the Progress of the Head.—By frequent pelvic and post-anal palpations you will be able to watch the descent of the head and judge of the progress of labour.

When the anus and perineum begin to bulge with the pains you know the head is near the perineum, and you will soon be able to see it, as it separates the lips of the vulva. The head is pushed down by each contraction of the uterus and as the uterus relaxes it recedes again.



FIG. 53.—Fœtus in the second stage. Head on the perineum.

Importance of Attempting to Prevent a Tear of the Perineum and of Recognizing a Torn Perineum after the Birth of the Child.

—Next to blood poisoning, unmended and undiscovered tears of the perineum are the only harm that can well happen to a woman who has a normal childbirth. The reason why a tear of the perineum is a misfortune to a woman is that it damages the pelvic floor on which the womb rests. Consequently displacements or falling down of the womb result, it may be many years after the first tear, and give her aching pains and bearing down feelings, which may destroy her happiness. Therefore it is essential

that you should attempt to prevent a tear of the perineum and also recognize one when it occurs.

Methods of Saving the Perineum. — The cross section of the partly extended head is greater than the section of the fully flexed head (p. 47), and therefore if you keep the head fully flexed as it passes through the orifice of the vulva, the part of the orifice that is liable to tear, namely the perineum, is less likely to do so than if you allow it to extend. Again, if the head comes through the vulval



FIG. 54.—Saving the perineum.

orifice very fast, the perineum is more likely to tear than if it comes through slowly.

These, then, are the points to which you have to pay attention in attempting to save the perineum, namely : (1) to keep the head fully flexed ; (2) to prevent too rapid passage of the head through the vulva. To follow the present Rotunda method, carefully sterilize your hands and put your boiled glove, if you have it, on your

left hand. The patient lifts her left thigh. Pass your left hand between the patient's thighs as you see it in the picture without touching the thighs. Place the fingers of your left hand on the foetal head as it appears with the pain and press the head against the pubic bone. The fingers cannot do much good, but this helps the action of the important muscle, the levator ani, which tries to push



FIG. 55.—Pulling a loop of cord over the child's head. The patient is here being delivered in the "cross bed" position.

the foetal head away from the perineum against the pubic bone.

But if the contractions of the uterus are violently pushing the head down on the perineum, you can do good. You can push against the head during a pain. You cannot stop its advance, but you can limit the speed with which it passes through the tightly stretched vulval orifice.

You should always do this ; but remember two points :

firstly, not to open the thighs more widely than is necessary, for this stretches the perineum; secondly, that torn perineums in primiparæ are very common. Of the primiparæ who are attended by nurses in the hospital about fifty out of every hundred get tears that have to be sewn up.

When the Head is Born.—Both your hands are clean. First see if the cord is round the child's neck. This you do by pulling on the child's head a little until you see its neck. If the cord is round its neck, put two fingers in and pull a loop down over the head. If the shoulders are being born, you can slip it over them. If the cord is so tight that you can do neither of these things, you must cut it through with scissors and press on the fundus to help delivery of the child. If either end of the cord bleeds nip it between your finger and thumb until the child is born. Then tie the cord.

Care of Mouth and Eyes.—There may be much mucus in the mouth of the child. Its first breath is to take air in and it may choke itself by sucking down the mucus. Therefore wipe out the child's mouth when the head is born with a clean piece of soft linen wrapped round your little finger.

With linen, wipe the eyes from the bridge of the nose outwards to free them of possible vaginal discharge.

Birth of the Shoulders.—The birth of the shoulders is brought about naturally by the pain that follows the pain that pushed out the child's head. The interval between the two pains may seem to you a long one, but there is no danger to the child, for the blood still passes from it to the placenta and it also takes short breaths.

In rare cases the child's face is of a dead white, or it gets very blue and has convulsive twitchings. In these cases you must hasten delivery. Do so by rubbing the uterus up to a contraction with your left hand and pressing on the fundus with the pain. This will press the child out. Should it not do so pass a clean finger of the right hand into the vagina, hook it under the anterior arm-pit and pull the shoulder down under the pubic arch. You will very rarely be called upon to do this.

It is unwise to pull on the child's head to deliver the shoulders, unless you are absolutely sure of the position or watch very carefully how the child's head is going to twist. If you try to twist the head one way and it ought to twist the other, the shoulders in the vagina will jam and you will probably have to send for a doctor to deliver the child.

Remember if the woman is in the left lateral position and the child is a Vertex I, its face turns up and looks at the ceiling; in a Vertex II it turns down and looks into the bed.

Vertex III and Vertex IV.—These positions usually change by rotation of the occiput to the front to Vertex II, Vertex I respectively. If they do not they are known as persistent occipito-posterior deliveries. As their delivery is more difficult than the normal vertex I will deal with them in a later chapter.

Delivery of the Body and Legs.—This is brought about by the same contraction as that which delivers the shoulders. The second stage is now finished.

CHAPTER XIII

THE CONDUCTION OF NORMAL LABOUR

(continued)

TREATMENT OF THE THIRD STAGE

Position.—Let the patient lie on her left side for a few moments after the birth of the child so that the blood and liquor amnii can drain away into the bath instead of into the bed. Then turn her on to her back, taking care she does not kick the baby as she turns. The back is more comfortable for the mother to lie on and you can watch the condition of the uterus better when she is in this position.

General Considerations.—The mother loses heat during delivery, and if she is not covered after the child is born, she will shiver. Therefore first cover her with clothes or a blanket. The clothes should cover her chest, abdomen and lower limbs. If she bends up her knees they will not get soiled.

The only fear in the third stage of labour is bleeding from the uterus. This, though a rare occurrence, is very dangerous to the mother's life. The whole of your treatment of the mother in the third stage is really to avoid any risk of this hæmorrhage after the birth and to be clean.

Glance round to see that you have the douche ready in case of hæmorrhage, for a hot vaginal douche is an admirable remedy, as will be described in the chapter on this kind of hæmorrhage. You have a kettle on the hob, cold water in a jug, a chair or box that you could

readily put on the table by the bedside, a jug from which to douche, and the bag with the Rotunda douche and vaginal nozzle near at hand. You should also have a sterilized catheter and your small basin with swabs. In short you assure yourself that, should hæmorrhage occur, you could set to work deliberately, instead of being frightened and confused.

Attention to the Child.—As long as the cord pulsates well, the child is getting oxygen. The child may be blue. If so hold it up by the legs, so that the fluid runs out of its throat and mouth and slap its back till it cries. The first breath takes air in, but if you hold the baby up by its ankles it can scarcely suck fluid into its lungs when upside down. Wipe out the mouth again with a piece of soft linen so as to clear the mouth. Another way of making a child cry is to throw a little cold water over it. To hold the child by the legs with the left hand, put your middle finger between the legs as you see in the figure. You can hold it quite firmly in this way.

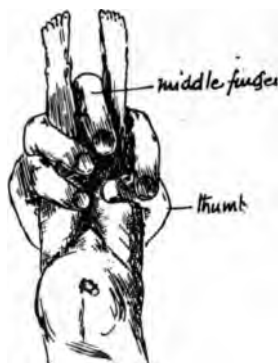


FIG. 56.
Method of holding child
by the legs.

When and How to Sever the Cord.—Do not sever the cord until all pulsation has ceased. Experiments have proved that children are stronger if you wait until pulsation ceases before tying the cord.

Take the ligatures from the corrosive sublimate solution and tie the cord firmly in two places. You will learn a reef knot, with the method of tying it, during your training. It is simple enough as long as you make the ligature secure. Tie one ligature about two inches from the baby and the other about two inches from the vulva, pulling lightly on the cord to stretch it. Cut through the cord with sterile scissors near the first ligature and see the end does not bleed. Wrap the baby up in a blanket or piece of

flannel and put it somewhere on the bed where you can watch it, but where it is out of the way.

What is Meant by the Control of the Uterus.—*From the birth of the child until a quarter of an hour after the delivery of the afterbirth you must control the uterus.*

What is meant by controlling the uterus? The uterus after the birth of the baby as a rule rests for a few minutes. Whilst resting it is not flabby, but firm, with what is known as retraction, a firmness which however is not as marked as that of contraction. Then further contractions occur at intervals to push the placenta into the vagina. The continuous firmness and thickening of the muscle, known as retraction, prevents bleeding by squeezing the blood-vessels. Contraction also prevents bleeding, but as it is not continuous, it is not constant in its action like retraction.

In rare cases retraction and contraction are deficient, the uterus is flabby and fills with blood. Blood also flows from the vulva. There is in fact "post-partum hæmorrhage." It is to assure yourself that retraction and contraction of the uterus are present that you control the uterus.

How to Control the Uterus.—Sink the little finger or that border of your left hand into the abdomen above the fundus of the uterus. The palm of your hand and your fingers then fit like a cap over the dome-shaped fundus of the uterus. Do not massage or rub the uterus, but lightly keep contact with the fundus. You will easily feel the normal uterus, firm when retracted, harder and smaller when contracted. When it gets flabby it fills with blood and its outline becomes indistinct. At the same time the pulse will quicken or the patient may get pale. It is to detect such an occurrence immediately that you control the uterus both before and after the delivery of the afterbirth. The treatment of the condition will be given under post-partum hæmorrhage.

Do not rub or massage the uterus if you feel it distinctly. You may be tempted to do so, but you will do harm if you do, for you make the part you rub contract separately. What you want is regular contractions of the whole uterus.

Again, rubbing the uterus disturbs the patient. She is tired and you want her to rest as quietly as possible. For the same reason, do not talk.

You must leave the control of the uterus for a minute or two whilst you attend to the baby and sever the cord.

The Pulse.—Take the pulse every ten minutes or so and



FIG. 57.—Diagrams of the expression of the placenta by the uterus into the vagina and the signs thereof.

record it. This will give you a good record of the progress of your patient. Its rate should fall during the third stage. If it rises, beware of post-partum hæmorrhage.

The Bladder.—If you see the rounded outline of a full bladder above the pubes, pass a catheter, for a full bladder interferes with retraction of the uterus.

Delivery of the Afterbirth.—The uterus contracts and squeezes the placenta into the upper part of the vagina. Owing to the patient lying down, the afterbirth will not fall out by its own weight but stays in the vagina a long time. So, when the uterus has squeezed the placenta out into the vagina, you will have to push the hard contracted uterus from the abdomen down into the pelvic canal and you will in this way push the placenta along

the canal in front of it, out of the vulva. The membranes follow. It is essential, then, to know the signs that tell you the placenta has left the uterus and is in the vagina. You must know them accurately, for the proper delivery of the afterbirth is your most important duty at a normal case.

1. The cord lengthens. You put a ligature on the cord some two inches from the vulva, after lightly pulling on the cord to pull any coil in the vagina out straight. When the placenta descends from the uterine cavity to the upper part of the vagina, the cord descends with it. Consequently when the placenta has left the uterus, if you lightly stretch the cord, the cord will lengthen outside the vulva and your ligature be distinctly more than two inches from the vulva. This is a very reliable sign. Sometimes, however, the uterus expels the placenta before you tie the ligature and then of course it is no good waiting for this sign to appear.

2. The second sign, however, is always present. To obtain it, draw the cord out straight, not pulling more than is sufficient to straighten it. Lay your hands on the abdomen on either side of the uterus, as if for pelvic palpation. Lift the uterus up towards the mother's chest. If the placenta is still in the uterus, it will be lifted up with the uterus and some of the cord outside the vulva will be drawn into the vagina. If the placenta is not in the uterus, no length of the cord is drawn into the vagina.

Again rub the fundus up to a contraction and when the uterus is hard press it gently down into the pelvis. Stretch the cord lightly with your other hand. As you press the uterus down, the cord outside the vulva lengthens. Release the uterus, which springs back into its original position. If the placenta is in the uterus, it springs back too, and the extra length of cord is again drawn into the vagina. If the placenta is outside the uterus, the placenta is pushed down in front of the uterus and remains down. It does not spring back when you release the uterus, and consequently the extra length of cord outside the vulva remains outside the vulva. *This is the best test.*

3. Before the placenta has left the uterus, the dome

of the fundus is felt usually below the umbilicus. When the placenta has been expressed into the upper part of the vagina, the uterus is perched on it and the dome of the fundus rises above the umbilicus. Mark the level of the height of the fundus immediately after the birth of the child and notice the rise to detect this



FIG. 58.—Expressing the afterbirth.

sign. It is not always possible to detect this rising of the uterus, but it is a useful sign when present.

4. When the uterus is perched on the placenta, you can easily push it from side to side. This is not a very reliable sign that the placenta has left the uterus, for sometimes you can readily “ballotte” the uterus when the placenta is still in it, possibly when it is in the lower uterine segment.

5. The placenta in the vagina sometimes causes a

bulging just above the pubis, which you may mistake for a full bladder.

Attention to these signs, especially to 1 and 2, will enable you to tell when the placenta has left the uterus.

How Long does the Uterus take to Express the Placenta into the Vagina?—The uterus may expel the placenta at once after the birth of the child, in five, ten, thirty, or more minutes. If it has not done so within an hour the case must be reckoned abnormal from a practical point of view.

When the Midwife should Express the Placenta.—You must never express the placenta until the signs show that it has left the uterus in a normal case.

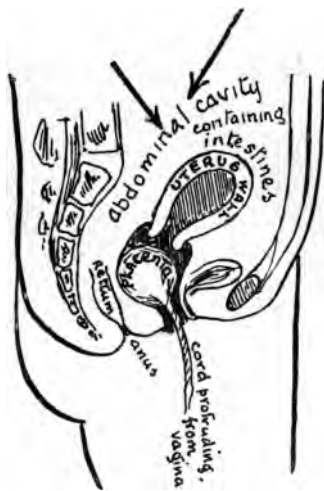


FIG. 59.—Diagram to show direction of "push" in expression of the placenta.

You will do no harm, provided there is no quickening of the pulse, pallor, or harmful loss of blood, to wait for half an hour before you attempt to discover whether the placenta has left the uterus or not. The patient is glad to be let alone for a time.

If it has then left, you can express the afterbirth. If you think it is still in the uterus, wait another half-hour. If you think, even then, that it is still in the uterus, attempt twice with two different contractions of the uterus to expel it, and if

you fail send for the doctor, with a note to tell him why you have sent.

How to Express the Afterbirth.—Wait for a contraction of the uterus. Rub the contracting fundus to make it harden to its strongest contraction. You use the contracted uterus as a pusher, with which you push the placenta along the parturient canal. It must be contracted for

this purpose. The arrows in the diagram show you the direction in which you must push, so as to push the hard uterus down the parturient canal.

Catch the hardened fundus then in your palm and fingers and push the uterus : (1) backwards towards the spine ; (2) down towards the vulva. Normally you need not push very hard. The gradual rolling out of the placenta from the vulva gives you the clue to the minimum force that is needed.

Delivery of the Membranes.—Wait for half a minute. Then take the placenta gently in both hands and pull gently. Often this is sufficient to make the membranes slip out of the vagina. If not, take the membranes gently in their breadth with as many clean fingers as possible, so as to spread the pinching pressure of the fingers on the membranes evenly. Pull gently with a slight rocking movement up and down and from side to side. Gradually the membranes will yield and come away. Sometimes they tear under your fingers and the sensation of their giving way you will easily recognize. When you feel them giving way, take hold of them nearer to the vulva and again pull gently.

Harm of Membranes left in the Vagina.—The membranes, if left in the vagina, rot quickly in two or three days. A mild form of blood poisoning results. Therefore, if membranes are left in the vagina, it is better to remove them.

How to Remove torn Membranes from the Vagina.—Clean your hands and the vulva as for a vaginal examination, and preferably wear a boiled glove. Take the near end of the membranes between your thumb and middle finger and twist the index finger round and round the membranes, pull gently and they will come away.

If you Cannot Remove the Membranes leave them. You should never attempt to remove any from the uterus. If fever arises during the lying-in period ask a doctor to see your patient.

Examination of the Afterbirth.—In order that you may be sure that no piece of placenta or membrane has been left

behind in the uterus, you must carefully examine the afterbirth.

First, turn the uterine or maternal surface of the placenta upwards, this is the spongy surface which is not covered with foetal membrane, holding it laid on your two spread hands. You will notice it is composed of some twenty lobes, with deep furrows separating them. If it is covered with blood clot wash it in a pail or basin of water to free it of blood clot. When you press these lobes together, you will notice they all fit accurately. Some-

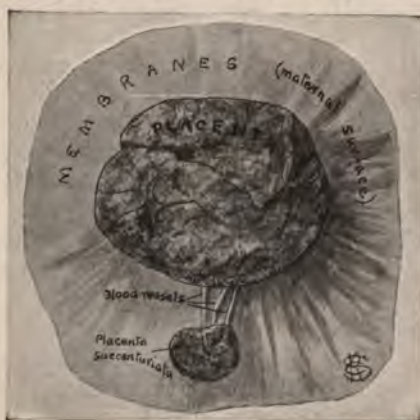


FIG. 60.

Afterbirth with placenta succenturiata.

times one of the furrows has torn bleeding edges, but when you press the edges gently together you find they fit accurately together. If they do not a gap is made and the piece of placenta which should fit the gap has been left in the uterus.

Examine the edge.

If you see torn vessels at the edge, a "placenta succenturiata"

has been left in the uterus. A placenta succenturiata is a small accessory placenta fed by vessels from the main placenta which gets torn when it is left behind. Fortunately, it is rare, for it is more than useless, being a definite danger to the woman, for it, or they—for there may be more than one—are frequently overlooked and left in the uterus. If left, post-partum hæmorrhage or blood poisoning is almost sure to arise.

Now turn the maternal surface downwards and unfold and hold open the membranes. They should be intact and large enough to enclose the child. Except the big hole through which the child has passed there should be

no other holes. You should try and separate the outer chorion, which is attached to the edge of the placenta, from the inner amnion, which you can peel off the shiny foetal surface of the placenta to the root of the cord.

If there is a hole in the chorion, or chorion and amnion, carefully examine the edge of the placenta for broken vessels, for such holes occur with placenta succenturiata. If you find no vessels, you need not trouble ; the hole is possibly due to a kick from the baby.

What to Do if a Piece of Placenta is Missing.—If a piece of placenta is missing, or you think a placenta succenturiata has been left in the uterus, it is your duty to send for a doctor, for they must be removed for the patient's sake.

I have already dealt with retained membranes.

Examining the Perineum to see if it is Torn.—After the afterbirth is born, control the uterus for a quarter of an hour and take the pulse of the mother, this should fall in rate. Then scoop up the blood from under the patient with your hands and put it into the bath. Turn the patient on her left side with her buttocks well to the edge of the bed and get a good light upon the perineum. Wash your hands. Pass the left hand from in front between the patient's thighs and open the posterior part of the vulva as if you were going to make a vaginal examination. Swab the parts free of blood with your wool swabs soaked in corrosive sublimate solution and see if the perineum is torn, wiping once only with each wipe from before backwards.

If the perineum is torn, you will see the torn surfaces separated by the fingers of your left hand. Reckon the extent of the tear and especially its depth. Some tears involve the posterior vaginal wall, and in these cases sometimes the skin of the perineum is not torn at all. These are especially serious tears, for they rip up the pelvic floor and are apt to be overlooked. A good nurse will not miss one, and if she is uncertain she should put a clean finger into the tear to gauge its extent.

What to Do if you Find a Tear.—The fourchette, or thin piece of skin that forms the posterior boundary of the vulva, is

practically always torn in primiparæ. You will see the small shallow laceration. It does no harm. But at the Rotunda Hospital, fifty out of every hundred primiparæ attended by nurses have lacerations, which have to be stitched.

Tears that have to be stitched are : (1) any tear of the skin that is more than half an inch long ; (2) any tear that is more than half an inch deep ; (3) any tear that involves the posterior vaginal wall without involving the skin and is more than a mere surface laceration.

You must send for a doctor, who will sew up the laceration. Let him know why you send for him. He will probably require the patient to stay in bed longer than usual. You should ask him how long. You will pay especial care to keep the sewn perineum clean from contamination from the motions, and not to separate the thighs during the lying-in.

Take out the stitches on the eighth to tenth day.

A perineum can be sewn up after the day of delivery as long as there are raw surfaces.

If you do not send for a doctor when the perineum is torn and should be sewn, you are guilty of neglecting the true interest of your patient.

Cleaning the Patient.—You have the patient on her left side. Wipe her back and thighs free of blood with a clean towel. Then wipe the vulva with corrosive sublimate wipes, till it is free of blood, *using one wipe at a time*. Wipe over a CLOSED vulva from now on through the lying-in period. There is no need for you to cleanse the mucocutaneous surfaces of the labia minora.

If her nightdress is soiled put on a clean one. Those that button on the back are easy to take off and put on.

Removing the Drawsheet and Upper Mackintosh.—Now remove the drawsheet and upper mackintosh, and put them in the bath. The patient rests on the binder and woodwool sheet.

The Pad.—Turn the patient on her back again. Take a piece of clean gamgee tissue about 10 ins. by 4 ins., and scorch one surface brown in front of the fire. The scorching kills the microbes. Put the scorched surface, when cool,

against the vulva. Dry pads are more comfortable than wet ones.

With poor patients use a boiled piece of linen soaked for half an hour in corrosive sublimate solution (1-1,000) and wrung out with clean hands as dry as possible.

The Uses of the Binder.—The binder brings a sense of support to the patient, and patients like it for this reason. It also keeps the legs together, if the perineum is torn, and keeps on the pad. Lying-in women, too, suffer from flatulence, and the binder opposes the distension of the abdomen by wind.

At the present day there is not the same faith in the binder as there was, and you need not insist on it, if your patient objects to it.

When to Put On and When to Take Off the Binder.—Put on the binder half an hour after the delivery of the afterbirth. This will give you ample time to see that the uterus is retracting and contracting properly and that there is no post-partum hæmorrhage. To do so, lay your hand occasionally on the uterus and watch the pulse. Let the patient wear the binder during the puerperium until she begins to walk.

How to Fit the Binder.—The patient is already lying on the binder. The lower border of the binder should be at least three inches below the level of the vulva, so that the thighs are kept together. Pin the binder from below up. Make the binder tight by pulling the ends together over the patient and nipping the binder with finger and thumb before pinning. We use straight stout pins in the Rotunda, and pin longitudinally, leaving the points between the folds of the binder. One pin is fixed near the lower border of the binder, the next over the pubis, the next between the pubis and umbilicus, and the last, which need not hold the binder so tightly, above the umbilicus.

Diet and Sleep.—The patient can have some tea and a little toast or thin bread and butter, if she likes, after which it is well for her to sleep. But do not draw the blinds down, for you will not be able to watch her face. She may grow pale from loss of blood and you will not know it.

Ergot.—Ergot is a drug that helps the uterus to contract. It is not needed in normal cases, but if the uterus is not as firm as you wish, or if there is a little bleeding that makes you anxious, you can give one or two teaspoonfuls of the liquid extract or Squibb's Ergot in water to your patient. *Never give it until you are sure every bit of placenta has been delivered*, for the hard contraction produced by the Ergot in some fifteen minutes after you have given it makes it very difficult for the doctor to get his hand into the uterus to pull the piece of placenta away.

The Baby.—When you have made the mother comfortable, take the baby and examine it to see that it is rightly formed. Put your little finger into its mouth and see that the roof of its mouth is not cleft, the defect known as cleft palate. You will see the deformity of hare-lip. Examine the baby's feet. The distortion of club foot is obvious. Sometimes the back passage is closed, the so-called imperforate anus. If you are in any doubt, push the tip of your little finger gently up the back passage, until you meet with the dark green bowel matter of the new-born infant, which is known as meconium.

If you find any defect, report it to a doctor.

The Baby's Eyes.—I advise you always to carry a small blue drop bottle filled with 1 per cent. silver nitrate. Wipe the baby's eyes with wool and warm water. Drop a drop or two of the silver nitrate solution into the hollow between the child's eye and nose to make a little pool. Open the child's lids, tilt its head so that the solution runs into its eye. Repeat on the other side. Then wipe the eyes again with wool in warm water.

This treatment may make the baby's eyes red for a day or two, but it has saved hundreds of babies from becoming blind after birth owing to the terrible inflammation of the eyes that occurs when any yellow vaginal discharge of the mother gets into them.

So much of your work will be amongst the poor, amongst whom these vaginal diseases are more common, that I advise you to do this to every baby's eyes as a routine.

The Baby's Tiolet.—The best way to get rid of the white

grease that often covers a new-born baby and is known as vernix caseosa (*vernix*—Latin, varnish; *caseosa*—Latin, cheesy), is to rub the baby over with a little oil before washing it with soap and water. Anyhow, it disappears of itself within a few hours. Wash the child with soap and water in a bath of a temperature that is pleasantly warm, about 100° F. Do not put enough water to immerse the child. Dab the child dry.

The Cord.—**DRY THE CORD** with especial care, for the cord must be kept dry in order to separate properly.

DRESS THE CORD first by powdering it well with a powder composed of boracic acid 1 part, zinc oxide 3 parts, and starch 6 parts. Take a square piece of gamgee tissue, 4 ins. by 4 ins., and scorch it brown at the fire on both sides. Cut it down to the centre with clean scissors. Slip the cord through the slit near the centre of the pad, powder again, and fold the pad over the cord, so that the whole cord is dusted and enveloped by the scorched pad. The rest of the baby's dress I need not describe. Every woman knows it, or should know it. At any rate, you will quickly learn how to dress a baby during your training. See, however, that the clothes, especially the swather, are not tight. The child must have free play for respiration and for moving its limbs for exercise. Sewing the clothes on the baby is better than pinning them, for a pin may run into the baby.

Rule 10 of the Central Midwives Board.—"The midwife must remove soiled linen, blood, fæces, urine and the placenta from the neighbourhood of the patient and from the lying-in room as soon as possible after the labour, and in every case before she leaves the patient's house."

The afterbirth is best burnt on the fire, but before you burn it remember to note down in your notebook that you found it complete on examination.

Again, never burn the afterbirth, if you send for a doctor, before he arrives.

What to Tell the Patient before Leaving.—Tell her to get as much sleep as she can. She can lie on her side if she likes. She can put the child to the breast, but she must not give

it any milk or the top of gruel. Tell her that she herself can have any light food she feels she could eat, such as tea and bread and butter, some jelly, with milk and soda. Tell her you will come and see her again within eight hours, but get some one to sit with her in the room in case she should need anything or feel faint.

When to Leave.—I advise you never to leave a patient who has had a normal labour until an hour has elapsed from the delivery of the afterbirth. In other cases you must stay longer. If you are attending with a doctor, but not staying in the house, ask him when you can leave. Little complications may arise. The child's cord may bleed from slipping of the ligature. The woman herself may lose more blood than she should. You must then look at the dressing of the child's cord and the mother's vulval pad before leaving. There should be no blood at all on the first, and experience will soon tell you how much blood to expect on the second.

You have been watching the pulse and seen that it has become slower, or at any rate, not faster. You had better not leave, if it is over 100 per minute, for the pulse should certainly not be so quick. Take the temperature before leaving, and note it, with the pulse, nature of labour, completeness of afterbirth, time of birth, etc., in a note-book, for future reference. Feel the uterus under the binder to see that it is firm.

If all is well, you can now leave, telling some one in the house where you can be found, if there is need of you.

CHAPTER XIV

THE NATURE AND MANAGEMENT OF THE NORMAL PUERPERIUM

What is the Puerperium?—The word puerperium is derived from two Latin words—*puer*, a boy, a child; and *parere*, to bear. It is popularly known as the lying-in period, because a civilized woman lies up for a good part of the time. Its length really depends on the doctor and the patient, more than anything else. For example, many uncivilized women do not lie in at all, but attend to their daily work as usual. Therefore it is not possible to define the normal puerperium more concisely than to say it is the period after labour that a woman rests before returning to her ordinary life.

Another way of looking at the puerperium is to regard it as the period during which the uterus and parturient canal return to their normal condition. Roughly this takes some six weeks. A uterus weighs about 35 oz. immediately after labour. For six weeks it gets smaller and smaller and then reaches its smallest size and weighs only 1½ oz. The thick vaginal walls get thinner too. The technical term for this process is involution (*involutio*—Latin, a rolling up).

Duties of a Midwife during the Puerperium.—The puerperium, although a normal process, is one in which experience has shown us that fever and other illness are apt to arise. The risk of such fevers is very greatly increased if the doctor or midwife do not adhere to the strictest cleanliness both during labour and during the puerperium. One of your most important duties during the puerperium is to be on

the look out for any sign of illness in the mother and to call in the doctor as soon as you do find she is ill.

If she is well your duties are to attend to her hygiene, her diet, keep her clean and tell her when she can get up.

Your duties to the baby will be dealt with in the chapters on the baby.

Visits.—Your first visit should be within eight hours of the time you left your patient after labour, but if such a visit means very early hours no harm will come from leaving her ten hours. You should visit her at least once a day for the next six days, and then every other day for fourteen days, after which you can discontinue your visits. I think, if you have time, you should visit her night and morning for the first two days.

What to do at a Visit.—Attention to the baby, as I said, will be given in another chapter.

The things to note in your book at a visit are : (1) the patient's temperature ; (2) her pulse ; (3) the height of the uterus ; (4) the lochia ; (5) the bladder and urine ; (6) the bowels ; (7) the diet ; (8) sleep ; (9) the breasts ; (10) general hygiene and attention to your patient.

1. The Temperature.—Take the temperature under the tongue with a half-minute thermometer for three minutes. In the first twenty-four hours after the birth of the child the temperature is apt to rise. You can disregard such rise of temperature. But if after the first twenty-four hours the temperature is raised above 99° F., you must find or seek a cause. You must apply the knowledge you gain from your experience and the chapter on the abnormal puerperium to the case.

2. The Pulse.—Take the pulse and record it. If the patient is nervous, the pulse rises when you go into the room. Let her get accustomed to you and hold the wrist for a little time before counting the pulse. For the first twenty-four hours after delivery the pulse may be uncertain. It is usually unnaturally quick for some days, if there has been much loss of blood and the woman is pale.

With these exceptions the pulse should not be more than 90 per minute, when the woman is lying quietly in bed.

Year 1917. ROTUNDA LYING-IN HOSPITAL. BED No. 42

Month June Name Ellen Rully Age 33

Admitted June 26 at 11 A.M. 1917 P.M. No. of Pregnancy 9th Period of Pregnancy Term

Previous Labors Normal Abortions None Full Term 2

Date of Last Labor September 21st 1916

Last Menstruation commenced September 18

State of health during Pregnancy Good On Admission Good

Pelvic Measurements, P.C. 20 In. C.R. 21 1/2 In. Sp. 21 1/2 In. Con. Trans Birth

Abdominal Palpation 14th Vertex

Vaginal Examination 1. 8 1/2 dilated, membranes unruptured, head presenting 20. VI 5. Pueris Perineus

Diagnosis 14th Vertex

Labors and Delivery. Labor commenced 20th at June 10 at 10 a.m. p.m. Membranes ruptured at 5.18 p.m.

Latent Days 24 1/2 of June at 6.40 P.M. Pains delivered 30 minutes

Presentations Vertex Position 1st Nature of Labor Normal

Membranes Complete Pains Complete

Examined before admission No Perineum Intact

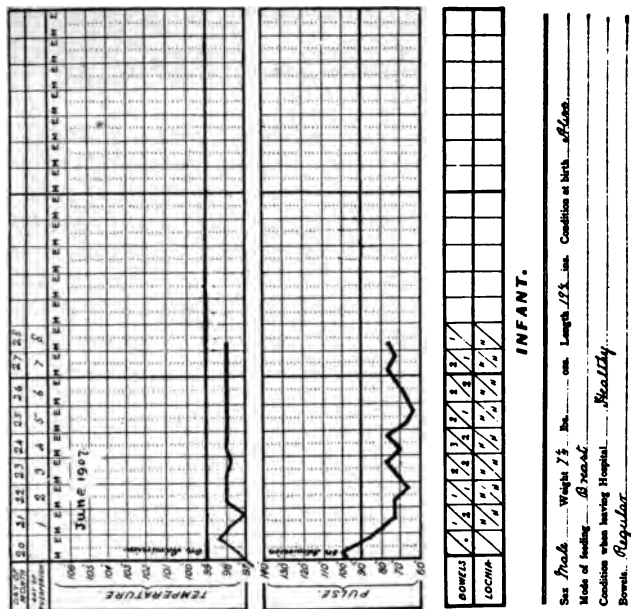
Student A. Dr. May Nurse in charge Byrne

Date of first leaving bed June 27th 1917

Date of discharge June 28th 1917 Condition when leaving Hospital Satisfactory

Day Nurse in charge Black Night Nurse in charge Kingley

Fig. 61.—Record of normal Rotunda case.



You can buy excellent notebooks with charts, in which to keep records of your patient's temperature and pulse

Morbidity.—The term morbid (*morbus*—Latin, disease) is used in contrast to healthy or normal. A morbid condition of your patient is one in which you must seek a cause.

For practical purposes, excluding the first twenty-four hours, you must seek a cause of morbidity: (1) if both the patient's pulse is over 90 and her temperature over 99° F.; (2) if with a slow pulse the temperature is over 100° F.; (3) if with a normal temperature the pulse is over 100. If the simple treatment you are allowed to give your patient does not restore the patient to normal in twenty-four hours (for you must call on such a patient every twelve hours until she is normal again), you must seek medical advice.

I wish to emphasize this. The three rules given may seem stringent, but they are *stringent for the welfare of the patient*. You have no better guide to her health than the pulse and temperature. In fact there is no harmful condition of the puerperium, except insanity, in which either one or other or both will not put you on your guard. Therefore I strongly urge upon you to keep an accurate record of both pulse and temperature.

3. The Height of the Uterus.—The uterus shrivels up until at the end of six weeks it is some twenty-four times smaller than it was after labour. The process of shrivelling varies greatly in different women. Also the height of the fundus depends on the fullness of the bladder or rectum, and you will not gain much by learning how high the uterus is on a particular day. What you should notice is the gradual diminution in size, and this is more important than learning tables of the height on various days. The fundus is usually in the neighbourhood of the umbilicus for the first day or two, and you will find it difficult to feel between the tenth and fourteenth day, for it has almost shrunk to a pelvic organ again, being about the same size as it is in the third month of pregnancy. If you can still feel it after fourteen days you should tell a doctor, for the case is abnormal.

4. **The Lochia.**—The lochia (*lochia*—Greek, lying-in) is the fluid that oozes principally from the placental site, but also from the walls of the uterus and from bruised or torn tissues of the cervix, vagina, or perineum. You will find at first it is pure blood, that on about the third day it becomes brownish and more watery and that it ceases about the fourteenth day. As in the case of the involution of the uterus, the important thing to notice is the gradual change. Look out for blood clots or bits of membrane. If present watch all the more carefully the temperature and pulse, and involution of the uterus, because probably some afterbirth is left behind and this is apt to rot and give the patient fever.

Normally the lochia does not contain harmful microbes. It has a sharp, characteristic smell, but is not foetid.

The Stain of Lochia.—The stain on the pads of healthy lochia is dark in the centre and light at the edges, that of unhealthy lochia light in the centre and dark at the edges, like a map.

5. **The Bladder and Urine.**—You must get the patient to pass her water within twelve hours of the delivery of the child. Let her roll over on her hands and knees to do so, keeping her thighs pressed together, if she has a torn perineum. If she cannot pass her water in this way, put hot flannels over the pubes and let her try again. If this fails you must pass a sterile catheter by sight after carefully cleansing the urethra with wipes soaked in corrosive sublimate (1-1000). There will be no need to pass a catheter after the second day; indeed you should not do so. The initial difficulty is due to the slack abdominal muscles or a bruised urethra. But the condition should pass off quickly, and if it does not the woman could either pass her water if she really tried, or else the case is one for a doctor. Remember one point, that when a bladder is over-distended the urine overflows, and dribbles away continually. The patient says she is passing a little water all the time. You will in such a case notice the big bladder when you have the binder thrown back to examine the height of the uterus. In such a case it is essential that you pass a catheter and

keep careful watch that distension and overflow do not occur again.

6. **The Bowels.**—A woman's bowels are apt to get confined whilst she lies in bed, which is bad for her. Give her a purge, such as a blue pill and Apenta water or any purge she knows, on the evening of the second day, and after that keep her bowels opened once or twice a day. You can let her sit upon the bedchamber, provided she has had a normal labour. It will do her no harm, and is more convenient than lying down.

7. **The Diet.**—Until the bowels are opened, the diet should be light. For example, our patients in hospital have bread, arrowroot, soup and milk. After the bowels have acted the patient may have anything she likes that she can digest. She should not have so much that she gets indigestion. Let her have plenty of milk, but only with her meals. Milk between meals destroys her appetite. She can have stout, or alcohol in other forms, if she is accustomed to it; but never advise her to take stout or alcohol.

8. **Sleep.**—A puerperal patient usually sleeps well. If she fails to sleep you can get a simple sleeping draught, such as veronal, from the chemist. If this fails to make her sleep the same night, call in a doctor, for sleeplessness is a sign of evil omen in a puerperal woman.

9. **The Breasts.**—If the breasts are squeezed on the day of delivery you will find a yellow fluid exudes from the nipple. It is called the colostrum. On the third or fourth day the white milk begins to flow freely. Breast feeding is described in the chapters on the baby.

Milk Fever.—In past days it used to be taught that a puerperal woman's temperature usually rose when the milk flowed into the breast, and this fever was called Milk Fever. Modern science has shown that this is rarely, if ever, the case, and such a rise of temperature is due to the sepsis caused by unclean midwifery.

10. **Hygiene and General Attention to the Mother.**—The Hygiene you learnt in Chapter IV you must apply to the lying-in woman.

THE ROOM.—See that the windows are kept open and

the room is not stuffy. An open window day and night is good for the baby and will not give it cold. The mother can have the blinds down if she likes, but there is no need for them to be down. It is not well to let her be too much of an invalid, for many women are open to suggestion and ready to believe themselves delicate.

Never leave slops of any sort in the room.

VISITORS.—She may see her husband, but if she is an excitable woman, keep other people from her for the first three days.

AFTER PAINS.—If she has bad after pains, that is pain when the uterus contracts, which it does to squeeze out lochia and for other reasons, put hot flannels on the abdomen, rub up the uterus and squeeze it to try and express blood clots, which are often the cause of the after pains.

WASHING THE PATIENT.—Her body should be sponged daily with warm water.

THE PADS AND CLEANING THE VULVA.—You should show somebody how to scorch and apply a pad after washing their hands, for the lochia will soak through the pads every two or three hours for the first day or two. The pads should be changed as often as the lochia soaks through to the outer side of the pad.

Daily you must turn the patient on her left side and carefully cleanse the vulva and its neighbourhood, first sterilizing your hands, then wiping over the closed vulva with soapy wipes and finally corrosive sublimate wipes, using one wipe at a time.

DOUCHING THE VAGINA.—Douching is never needed in a normal case.

When Can the Patient Get Up?—You should keep the patient in bed until you no longer can feel the uterus and the lochia has almost ceased. This will be between the tenth and fourteenth days. If, on getting up, the lochia become red again, the patient had better have another day or two in bed.

A woman should not stay in bed longer than a fortnight, except by doctor's orders. Our hospital patients get up

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on the evening of the seventh and go out on the eighth day.

A woman may sit up on the fifth day.

She may go out after she has been up for five or six days.

CHAPTER XV

THE ABNORMALITIES OF PREGNANCY

MINOR AILMENTS AND HÆMORRHAGES OF PREGNANCY

Introduction.—From now until the chapters on the baby, I shall deal with abnormalities in the mother : (1) during pregnancy ; (2) during labour ; (3) during the lying-in.

In the majority of these cases you will have to inform a doctor.

Your duty in all of them is : (1) to try and correct the minor ailments ; (2) to be able to recognize promptly the conditions which need the attention of a medical man.

THE MINOR AILMENTS OF PREGNANCY

Morning Sickness.—Morning sickness is common in pregnant women from the first to the fourth lunar-month. The patient either actually is sick or feels sick directly she rises in the morning. If it troubles her you can sometimes stop it by telling her to take some tea and toast in bed before getting up.

Indigestion and Heartburn. Toothache.—These, too, are common in pregnant women. Sometimes all are due to bad teeth. In the early stages of pregnancy there is no reason why a woman should not go to the dentist. Sometimes the heartburn is due to eating too much, or to constipation. A glass of hot water every morning is a simple remedy. Careful washing of the teeth is also advisable.

Varicose Veins. Hæmorrhoids. Pruritus Vulvæ.—The big blue twisted veins down the leg, known as varicose veins, are common in pregnancy, because the growing uterus obstructs the flow of blood back from the legs to the heart.

All you can do for the patient is to tell her to rest with her legs up, when she is in the house.

Hæmorrhoids or piles are small bunches of varicose veins and redundant skin situated round the anal orifice. They are apt to give trouble in pregnancy, causing itching and sometimes bleeding, when the bowels are opened. When present, the bowels must be opened twice a day, and the patient must rest after they have been opened. The pelvis should be bathed with cold water after the opening of the bowels.

Pruritus vulvæ is the name given to a distressing itching of the vulva. You can advise a woman to wash the parts with soap morning and evening, and to use a dusting powder. Resinol ointment is good for itching.

If any of these complaints are really troublesome, advise your patient to see a doctor.

ABNORMALITIES DUE TO SOME SEPARATION OF THE OVUM FROM ITS IMPLANTATION INTO THE UTERINE WALL OR TUBE, LEADING TO HÆMORRHAGE

Meaning of the Heading.—I mean that, normally, the ovum, i.e. foetus, bag of membranes and placenta, remains attached to the uterus until delivery. It is therefore abnormal for any part of, or the entire ovum to become detached before full term. When any part does become detached, the raw surface of the uterus or the tube (for pregnancy can occur in a tube) bleeds. The blood either escapes at the vulva, which is the usual course, or sometimes the signs of internal hæmorrhage, such as pallor and quick pulse, occur, without any blood escaping at the vulva.

The conditions that are included under this heading are (1) abortion ; (2) vesicular mole ; (3) tubal pregnancy ; (4) miscarriage ; (5) premature birth ; (6) accidental hæmorrhage ; (7) placenta prævia.

Duties of the Midwife.—In all these cases, with the exception of a complete abortion, or a complete miscarriage, or a premature birth, the midwife must send for the doctor at once. If the bleeding is very severe she must try to

stop it : (1) by a hot vaginal douche ; (2) by a vaginal plug, before the doctor comes

Her duties then are simple. She should be able to recognize a complete abortion or a complete miscarriage. She must keep all that is passed for the doctor to examine. She must be able to detect internal hæmorrhage. She cannot help detecting external hæmorrhage. In either case she sends at once for the doctor. When external bleeding is severe in its effect upon the patient, making her very ill, the midwife should know how to give a clean, hot vaginal douche and how to plug the vagina in a clean and efficient manner.

Abortion, Miscarriage, Premature Birth.—These terms I will define now in order that you may understand the connexion between them.

They all refer to the birth of the ovum :—

By **ABORTION** is meant the birth of the ovum any time up to the end of the third lunar-month.

By **MISCARRIAGE** is meant the birth of the ovum at any time from the end of the third lunar-month to the end of the seventh lunar-month, after which time it is possible to rear the child when born.

By **PREMATURE BIRTH** is meant the birth of the ovum from the end of the seventh month until the tenth month, when the child is full term.

ABORTION

Abortion is more common than miscarriage. You remember that the ovum in the first three months is attached to the uterus by filaments from the chorion known as chorionic villi, which look like white seaweed, when floated out in water. After the end of the third month, most of these villi wither away, whilst some become greatly enlarged to form with the thickened opposing decidua, the placenta. The placenta attaches the ovum to the uterus more firmly than do the delicate chorionic villi, and that is why abortion is more common than miscarriage. Abortion is quite common. About fifty out of every hundred married women have one or more abortions.

A **Complete Abortion** then consists of the tiny foetus, the bag of membranes filled with liquor amnii, the chorion made shaggy by chorionic villi which float out in water, sometimes the maternal decidua, a thin fleshy membrane, which covers over the chorionic villi, is discharged as well. From a practical point of view, as long as a little walnut-shaped mass is discharged entire, covered with chorionic villi, from which, when opened with scissors, liquor amnii in which the foetus floats, escapes, it does not matter about



FIG. 62.—Complete abortion (with exception of the decidua) of the third month.

A, chorionic villi forming placenta; B, blood clot;
C, embryo seen through the membranes.

the decidua, for the decidua will come away in a few days in the lochia, which follows an abortion as it does a full-term delivery. The patient will often describe an abortion as a lump of flesh, but you must not rely on her description, but must inspect it and see that it is complete yourself.

At the end of the first lunar-month the ovum is

about the size of a thrush's egg, at the end of the second, a hen's egg, at the end of the third, a small orange.

If you see this and are an experienced and careful nurse, I do not see why you should not treat the case yourself, following out the same treatment as when treating an ordinary lying-in, keeping the patient in bed until the lochia has ceased.

But you will not often come across such a case, and in all other cases, without exception, *when a pregnant woman bleeds you must send for the doctor.* Even in a complete abortion I think you will be wise in sending for a doctor. *Sometimes women try, with, or without success, to get rid of*

the ovum at this time, when the birth of a full-term child will involve them in trouble. It would go against you if you had attended such a case without a doctor and in some way the case came into the law courts.

Causes of Abortion.—I do not think you need trouble much about the causes of abortion, but in a healthy woman, a fall or accident, unless severe, should not bring about an abortion. There is sometimes a cause, which the doctor can detect, and put right, and thus prevent the tendency to abort. Often, however, abortions can neither be foreseen nor prevented.

Signs of Abortion.—An abortion is, in reality, a labour on a miniature scale. The ovum separates from the uterus and is expelled. Separation of the placenta, the feeder of the full-term foetus, leads to bleeding. Separation of the chorionic villi, the feeder of the embryo, leads to bleeding. Abortion differs from other labour in that the ovum is, as a rule, expelled entire, whereas in miscarriage, premature and full-term birth, the foetus is born first, and the afterbirth later.

The signs then of abortion are : (1) pains ; (2) bleeding.

PAINS.—The pains are the pains of labour, that is to say, they come and go. They are due to the contractions of the uterus opening the internal os to allow the ovum to pass.

They do not always discharge the ovum. Sometimes there is some bleeding and a little pain and with rest these both pass over and the abortion that was threatening—the so-called threatened abortion—is averted.

Sometimes they cause the waters to break and the foetus to be discharged. But the rest of the ovum, the membranes and villi are left behind in the uterus. This, you see, is like a normal labour in which the afterbirth is retained in the uterus. It is called an incomplete abortion.

Thus you see abortion is not a thing that a nurse can treat, for the exact nature of an abortion is difficult to diagnose, and doctors will tell you they would rather treat a full-term labour than an abortion. You see also the importance of saving everything that comes away from the woman, blood-clots and all, for the doctor to examine.

THE BLEEDING.—It is to this that you have to pay

attention. Sometimes it is slight ; sometimes a careless woman allows a slight dribbling to go on for days or weeks, before consulting a doctor, sometimes it may be sudden, severe, and imperil the woman's life.

SIGNS OF SEVERE BLEEDING.—First of all you will see the blood on the woman's clothes, or on the sheet of the bed. But you cannot always judge of the severity of the bleeding by the amount of blood you see, for a pint of blood lost will make one woman very ill, whereas another loses two pints without greatly feeling the effects. You all know, more or less, the signs of severe loss of blood.

The patient becomes very pale and faint. Her lips are white. Her forehead is bathed in a cold sweat. Her pulse is fast, feeble, or uncountable. Her breathing is quick and shallow. She is in great anxiety, for she is in fear of her life. When very ill, she is restless and tries to get out of bed. Her mind begins to wander, she sinks into unconsciousness and dies.

Treatment of Abortion.—The first thing that you should do is to put the patient to bed at once and send for the doctor.

The next thing you should do is to collect all the blood-clot or other matter that has been passed and put it gently in a bowl for the doctor's inspection. In an ordinary case you need do no more until the doctor's arrival, except see that there are clean jugs, basins and water, hot and cold. You can allay the fears of your patient, for it is rare for death to occur from an abortion.

If there is Severe Bleeding.—If you fear the bleeding is likely to endanger the patient's life before the doctor comes you must stop it, or try to do so. You have two means at your disposal: first, you should give a hot vaginal douche ; secondly, you should plug the vagina.

How to Give a Hot Vaginal Douche.—In the conduction of normal labour I told you how to be ready for the douche, and you make the same preparations now.

Get a small table and put it by the bed. On it stand a stool or box, and on that a jug. The jug should be between two and three feet above the patient's body.

The jug must be clean. Pour into it some creolin, about

a tablespoonful of creolin to the gallon of water. An ordinary washstand jug contains about a gallon. This amount makes the water turbid; creolin is a good anti-septic, for it kills to some extent the microbes and does not injure the woman.

Add cold water to the creolin, for it will not mix well with hot. Then add boiling water from the kettle. Put the patient on her left side with her buttocks over the edge of the bed; a mackintosh passes from under her and dips into a bath. Wash your hands and the vulva, as described



FIG. 63.—Giving a vaginal douche.

under the conduction of normal labour. Insert the plunger of the Rotunda douche into the jug and the curved protector over the edge of the jug. Fit on the glass vaginal nozzle. Turn on the tap. Nip the tube. Squeeze the bulb. Let go the bulb. Let go the tube. Squeeze the bulb again and the siphon action has started. Let the douche fluid play a few moments over your forearm. It should be as hot as you can bear with slight discomfort. Insert two

fingers into the vagina and pull back the perineum a little. Insert the vaginal nozzle whilst the fluid is flowing and push it into the vagina without fear, for you can do no harm.

Keep your fingers pulling back against the perineum while you douche, for this allows the fluid to flow out.

Use a jug-full of hot fluid. If the bleeding does not stop, plug the vagina.

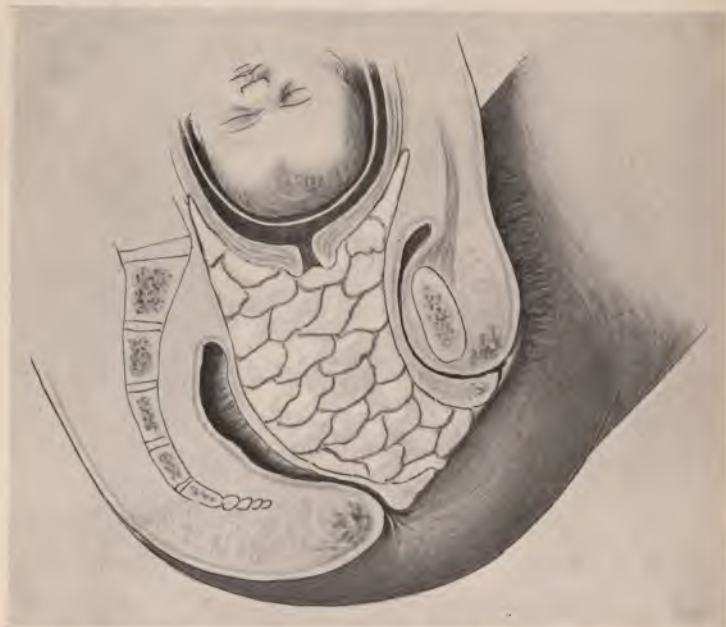


FIG. 64.—The vagina plugged. (The diagram shows the vagina plugged for accidental hæmorrhage, q.v.)

How to Plug the Vagina.—The best plugs for plugging the vagina are rolled up bits of clean cotton-wool, about the size of the end of your thumb. If you have no wool, tear up some linen strips and boil them. You will want a great number of them, for the vagina is capacious—at least a big sugar bowl full of them. Boil them first in a sauce-

pan for two to five minutes. Add cold water from the tap to cool them quickly and a very little lysol, if you have it. A small teaspoonful to the pint is actually the standard quantity. The lysol makes them slip in more easily and is an antiseptic.

The woman is already in the proper position. Pass a catheter always just before plugging the vagina.

Pass three or four fingers of your left hand into the vagina and press back the perineum and posterior vaginal wall with them. This you will find opens out the vulva and vagina thoroughly, so that you can easily insert your plugs; you must not remove these fingers whilst you are inserting the plugs. Take a plug in your right hand, squeeze it dry and push it with two fingers into the fornix, that is the roof of the vagina, down the centre of which the cervix projects. Take another and push it up and ring round the cervix with the plugs. You must ring the cervix round tightly with these plugs in order to plug properly. You can now insert two plugs at a time, pushing them in tightly until the vagina is full to the mouth of the vulva. You can keep them in position as you push them in with the fingers of your left hand that pull back the perineum and keep the vulva opened. Hold them in with a pad over the vulva and a **T** bandage, a bandage shaped like a **T**, the upper part encircling the waist, the hanging part being passed through the legs and being tied or pinned to the waistband.

This plugging of the vagina, as you might guess, is painful to the patient, but



FIG. 65.—**T** bandage.

if you do it as I have described, paying especial attention to a really tight packing of plugs round the cervix and in the vault of the vagina, the bleeding will stop, and that is the great point.

If she is very collapsed you can give a little raw brandy by the mouth and wait for the doctor.

Recapitulation.—I want you to remember these two treatments of vaginal douching and plugging, for they are the means by which you stop all serious EXTERNAL hæmorrhage, which occurs in pregnancy.

Putrid Abortion.—Sometimes an ovum dies and becomes putrid in the uterus. Sometimes a part only is discharged and the part left in the uterus becomes putrid. In either case the patient will be morbid (p. 136), that is, she will have raised temperature or pulse or both, and a foul-smelling, dirty brown, vaginal discharge. A doctor must be sent for in such a case.

MISCARRIAGE AND PREMATURE BIRTH

In miscarriage and premature birth the rule is for the waters to break, the foetus to be born and the afterbirth to follow. You see that they are really similar to a normal labour and you treat them similarly. There are, however, two exceptions. The first concerns miscarriage. If the legs of the foetus appear at the vulva you can pull on them without fear. It does not matter if the arms extend above the head, a point I will explain more fully under breech deliveries. The second is that the placenta in both miscarriage and premature birth is likely to be retained, for it does not separate so readily as a full-term placenta. If it is retained for over an hour you must send for a doctor.

SEVERE HÆMORRHAGE AT THE MISCARRIAGE PERIOD is rare, and is due, as a rule, to premature separation of the placenta; you deal with the case exactly as with bleeding in abortion.

HYDATIDIFORM OR VESICULAR MOLE

Definition of the Name.—*Hydatis* is the Greek for vesicle, so you see hydatidiform and vesicular describe the same

condition. Mole is from the Latin *mola*, a mass. The name then means a mass of vesicles, and it is applied to a rare condition, in which the chorionic villi in the early months of pregnancy become changed by degeneration into a mass of vesicles or tiny bladders. The figure shows you what a vesicular mole is like.

Signs.—The condition begins before the chorionic villi



FIG. 66.—Hydatidiform mole.

wither, that is, before the end of the third lunar-month of pregnancy. The vesicles grow rapidly. Consequently, a uterus of three months reaches the size of one of five months. This is one of the signs. The second is a blood-stained watery, or bloody discharge from the vagina. The third is finding some vesicles embedded in the discharged blood clot. They have been well described as looking like white currants floating in red jelly.

Treatment.—Your treatment is identical with that of abortion, namely : (1) put the patient to bed ; (2) keep everything that comes away ; (3) send for the doctor ; (4) if there is severe bleeding give a hot vaginal douche and plug the vagina.

TUBAL OR ECTOPIC PREGNANCY

Definition of Terms.—"Tubal" means in the Fallopian tube, the tube that leads from the ovary to the uterus. Ectopic is from the Greek *ectopos*, out of place, because the pregnancy is out of place, namely, out of its proper place, the uterus, and in an improper place, the tube.

Cause.—The male and female elements meet and join in the tube and do not, for some reason, get swept by the cilia into the uterus, but stay and grow in the tube.

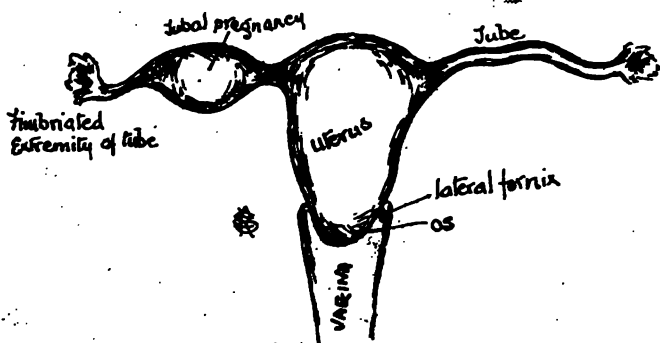


FIG. 67.—Tubal pregnancy.

Signs and Events.—The foetus grows in the tube, at first, just as if in the uterus. Usually it ruptures the tube before the end of the fourth lunar-month of pregnancy. The bursting of a tubal pregnancy is a terribly fatal event. The woman bleeds into her own body cavity and dies of loss of blood.

Therefore you must know the principal signs, both before rupture, and at rupture.

BEFORE RUPTURE the signs are that a woman misses a period or two, then possibly she has colicky pains in the pit of her stomach with fainting attacks at the same time, and she loses a little, never much, blood from the vagina.

It is because of this deadly danger of tubal pregnancy that it is your duty always to report any bleeding that

occurs in the early months of pregnancy, and your duty is yet more imperative if she has had fainting attacks with colicky pain.

AT RUPTURE the signs are those of hæmorrhage with extreme pallor, collapse with abdominal pain. They are so urgent that the patient's friends never hesitate to send for the doctor.

ACCIDENTAL HÆMORRHAGE AND INEVITABLE HÆMORRHAGE OR PLACENTA PRÆVIA

Definition of Terms and Conditions.—Prævia is from the Latin word *præ*, before, and *via*, the way, and refers to the placenta being implanted in the uterus so that the whole or part of it is in front of the child's presenting part. Consequently the head, for example, if presenting, has to squeeze past the placenta before it reaches the internal os. Both accidental and inevitable hæmorrhage are terms limited to the premature separation of the placenta, or more often a part of the placenta, at any time from the beginning of the seventh to the end of the tenth lunar-month. By premature, I mean separation of the placenta before the birth of the foetus. The bleeding that you always get in the third stage *after* the birth of the child, in premature separation you get *before* the birth of the child. As the presence of the child prevents the uterus retracting and contracting to a small size to stop the blood flow from the vessels that are torn open in the wall of the uterus by the separation of the placenta, the bleeding is continuous, severe, and frequently fatal.

Experience has shown, although no very good reason is given for this, that a placenta that is "prævia" nearly always begins to separate about the seventh or eighth lunar-month of pregnancy. It always causes bleeding before the birth of the child. Hence the hæmorrhage of placenta prævia is called INEVITABLE.

But in accidental hæmorrhage the placenta is implanted in its proper place in the upper part of the uterus. There is no particular reason why it should separate prematurely.

Sometimes it follows after a fall or a blow received by a woman who has either some uterine or general disease. Possibly for both these reasons, namely, because it seems an unfortunate accident, and sometimes follows an accident, it is known as **ACCIDENTAL HÆMORRHAGE**.

Diagnosis between the Two, Accidental and Inevitable.—A nurse is not supposed to diagnose between the two. The two signs that she might meet are : (1) she might feel the spongy mass of the placenta prævia with her vaginal fingers in a vaginal examination ; (2) placenta prævia being in front of the head prevents it engaging. Malpresentations are, therefore, common. Malpresentation plus bleeding before the birth of the child probably means placenta prævia.

Varieties of Accidental Hæmorrhage.—Usually the blood flows freely from the vulva. Very rarely *no* blood appears externally, but the bleeding occurs in a flabby and diseased uterus. The first is known as revealed, the second as concealed. The second is very fatal. You have all the signs of internal hæmorrhage together with great pain from the stretching of the uterus by the blood. Sometimes part of the blood escapes and some is retained.

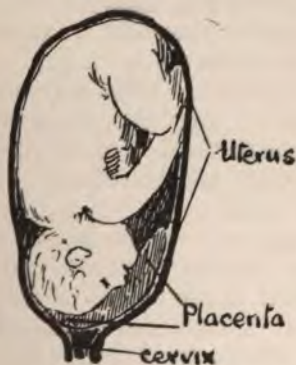


FIG. 68.—Placenta prævia.

Varieties of Placenta Prævia.—If the placenta is implanted so low down that it covers the internal os, it is called central ; if it only touches the edge of the internal os it is known as marginal ; if only a piece dips down in front of the presenting part, but the greater part is implanted above the presenting part, it is known as partial. You need not trouble yourself about these differences.

They have very little practical importance.

Signs of Accidental and Inevitable Hæmorrhage.—The signs

are those of loss of blood. In revealed accidental hæmorrhage and placenta prævia the blood flows from the vulva. The bleeding is often very free and not infrequently fatal.

Treatment.—You follow the same treatment as in abortion. Put the patient to bed, send for a doctor; if the bleeding is alarming and dangerous give a hot vaginal douche and plug the vagina. Give raw brandy if the patient is near death.

The vagina is more capacious in the latter months of pregnancy. You will want a large pudding basin full of plugs. Pay special attention to a firm, tight ring of plugs round the cervix. You must plug tightly and in no stupid, half-hearted fashion, if you are to do good. You must also put on a tight abdominal binder in these cases, pressing from above down to jam the uterus down on to the vaginal plug. Bleeding will cease if you plug properly.

There is one exception to plugging in these cases. If the os is fully dilated or nearly so, the head well down, and there are definite labour pains, rupture the membranes. The bleeding usually ceases during the second stage of labour, and if it recommences in the third the placenta, already partly detached, should be expressed as soon as possible.

After Effects.—Collapse is a result of severe hæmorrhage. If labour comes on, as it not infrequently does, the uterus, weakened by the loss of blood, contracts and retracts badly, and so post-partum hæmorrhage may kill the woman.

Her feeble, bloodless condition also adds to her risk of the fevers and illnesses of the lying-in period.

But all these cases are doctors' cases and upon them the responsibility rests.

What the Doctor Does in these Cases.—It is not absolutely necessary that you should know what the doctor will do in these cases, but it is both an advantage to you and interesting for you to follow the meaning of his treatment. Again your patient will often ask you about chloroform and what is going to be done, and you must know a little to prevent sharing her fears that something terrible is going to happen. I shall not be able to give all the possible

treatments in this book, but only outline a few. In all the cases with which we have been dealing, the bleeding is due to partial separation of the ovum from its implantation. The certain way of stopping the bleeding is to complete the separation and empty the uterus of the ovum quickly. The bleeding stops when the uterus is emptied. Sometimes, however, the bleeding may not be severe and the doctor will think the treatment of destroying the life of the ovum too severe. He tries to save the life of the ovum by putting the mother completely at rest in bed so as to rest her womb.

ABORTION.—If the bleeding is slight and there is no reason to think that any part of the ovum has been discharged (and therefore the ovum as a rule is not dead) the patient is put to bed and kept there for a varying length of time in the hope of staving off abortion.

If the bleeding is severe and dangerous to the mother, if some of the ovum has been discharged and some left in the uterus, if the ovum or the part left is putrefying, the doctor will probably give chloroform and empty the uterus, either with his fingers or an instrument called a curette. Sometimes he has to artificially open the internal os first, if it is tightly closed. This can be done by instruments called dilators, by tents, by pushing a piece of iodoform gauze into the cervical canal, or by plugging the vagina. Indeed, the latter operation often so irritates the uterus that it contracts vigorously and discharges the ovum on to the top of the plug.

The best known dilators are the metal Hegar's dilators. These are of different sizes. A very small one is first pushed into the cervix and then the next size, and so on. Frommer's dilator is a large instrument with an apex of prongs, which open out on screwing the handle.

Tents are made of hard seaweed. They are sterilized in alcohol, then put into the cervical canal. There they swell by absorbing water to several times their original size and so expand the canal. You will be able to see all these instruments during your training in hospital.

HYDATIDIFORM MOLE.—When this is diagnosed the treat-

ment is to empty the uterus at once, probably first giving chloroform and dilating the os.

RUPTURED TUBAL PREGNANCY.—This is so serious that the only satisfactory treatment is to get a surgeon to open the abdomen and cut out the ovum and tube. Treatment varies greatly according to the conditions found.

ACCIDENTAL HÆMORRHAGE.—Some doctors treat this by plugging the vagina until they can take away the child by forceps. Others rupture the membranes. Others open the cervix by cutting it and deliver the child and afterbirth at once.

PLACENTA PRÆVIA.—The two chief treatments for this are : (1) to put the fingers into the vagina and push the child in such a way that a leg can be caught and pulled through the os (this is known as turning) ; (2) to put a Champetier de Ribes' bag into the uterus and fill the bag with water. By pulling on the child's foot or the tube of the bag, the breech of the child in the first treatment, the bag in the second, presses on the placenta and stops the bleeding, as you stop a bleeding finger, by pressing your handkerchief on it.



FIG. 69.

Showing the breech pressing on the placenta prævia.

Douching Fluids.—The doctor will very probably douche out the vagina and uterus and he may not use creolin, but ask for some other fluid. I give the principal ones. Remember your measures first :—

A teaspoonful=1 drachm ; 8 drachms go to an ounce.
2 tablespoonfuls=1 ounce ; 20 ounces go to the pint.
2 ordinary tumblers=1 pint ; 8 pints go to the gallon.
A fair-sized bedroom jug holds about a gallon.

CORROSIVE SUBLIMATE SOLUTION.—A tabloid to a pint

of water makes a solution of 1-1,000. It is used weaker for douching, one tabloid to four or six pints.

BINIODIDE OF MERCURY.—This disinfectant you can also buy in tabloids. It is more expensive than corrosive sublimate, but I think it is worth the extra expense and most doctors trained at the Rotunda use it by preference for cleansing their hands and the vulva. It is more poisonous to the microbes and less poisonous to the mother than corrosive sublimate. It does less damage to your skin and does not damage metal instruments like corrosive sublimate, except perhaps sharp scissors and knives. Like corrosive sublimate its action is destroyed by soap.

One tabloid in a pint of water makes a solution of 1-1,000. For douching it is used in strength of about 1-4,000.

CARBOLIC ACID.—This is not much used in midwifery. If it is used it should be in the strength of about 1-80 to 1-100. Two teaspoonfuls to a pint make 1-80.

CONDY'S FLUID—Four ounces of the fluid to a gallon of water (i.e., eight tablespoons to a jug) can be used for douching. It turns brown when its action has been destroyed.

LYSOL.—Lysol is a soapy, lubricating disinfectant and is useful to put into basins or dishes that will contain the doctor's instruments. It is used for this purpose and sometimes for douching in solutions of 1-100, or 1½ teaspoonfuls to the pint.

CYLLIN AND CREOLIN.—These are the disinfectants used for douching at the Rotunda Hospital. Cyllin is said to be five times as strong as creolin. Neither are poisonous to the patient. Both must be mixed with cold water before adding hot. Both are used in strength of half an ounce to a gallon, or a tablespoonful to a bedroom jug.

NOTE.—Remember all disinfectants, if too strong, make the skin, and still more raw surfaces, smart and sting.

CHAPTER XVI

THE ABNORMALITIES OF PREGNANCY DUE TO TOXÆMIA

What is meant by Toxæmia?—The term Toxæmia is composed of two Greek words—*toxicon*, poison; and *haima*, blood; so you see it is simply a technical term for blood poisoning, a term with which every one is familiar. The blood poisoning or toxæmia of pregnancy is not due to microbes. Septicæmia and sapræmia (*septos*—Greek, putrid; *sapros*—Greek, putrid; *haima*—Greek, blood) are the two terms given to blood poisoning due to microbes. Toxæmia is due to two causes: 1, increased activity of the body processes; 2, decreased excretion of waste products. Great activity produces waste substances, comparable to the increased ash of a quick fire. These waste substances poison the body. Thus if you have taken great exertion you notice the effects of the poisoning by waste products in feeling tired and lethargic, you yawn and are sleepy, and yet if you are overtired you will not sleep well, you have no appetite, you may be sick or feel sick or giddy when you stand up, your hands tremble when you take hold of your pen or needle, you have a headache, you may feel depressed or irritable, your feet are swollen and ache. All these symptoms may arise too from constipation, which does not allow these waste matters to be passed out by the bowel in the fæces. They become absorbed into the blood and mildly poison the system.

The Toxæmia of Pregnancy.—Women who are pregnant have more of these waste substances in their blood, owing to the rapid growth of the child, and unfortunately they

are very apt to be constipated and also their kidneys not infrequently become defective and do not get rid of the proper amount of dissolved refuse matter in the urine. Pregnant women are therefore very liable to the symptoms I gave you in the last paragraph, and unless prompt means are taken to prevent further blood poisoning, they may get seriously ill and die. The serious form of poisoning shows itself in the early months of pregnancy, from the third to sixth or seventh month, in the pernicious and continual vomiting of pregnancy; in the later months, from the seventh to the tenth, in fits, which are known as eclamptic fits.

PERNICIOUS VOMITING

Pernicious vomiting is known technically as hyperemesis gravidarum (Greek—*hyper*, over; *emesis*—Greek, sickness; *gravida*—Latin, a pregnant woman).

Now, although many of the other symptoms of poisoning, such as headache, sleeplessness, constipation, irritability or depression, accompany it, yet the vomiting is so conspicuous that it overshadows the other symptoms. Pernicious vomiting is really exaggerated morning sickness. Morning sickness should cease by the end of the fourth lunar-month. But in pernicious vomiting the sickness continues; the patient can keep nothing on her stomach, her vomit becomes dark in colour, day by day she gets worse, she is intensely thirsty, she sleeps badly, she may abort, and the exhaustion of the abortion may kill her, or without aborting she becomes more poisoned, her breath is foul, her tongue dirty, her urine scanty and high-coloured or bloody, she becomes delirious and dies.

Treatment.—You will at once see that if morning vomiting is bad and occurs at other times of day, making the patient feel ill, a doctor is essential.

What the doctor does.—He will give the patient medicine to open her bowels freely, will give her plenty to drink to flush her system, will regulate her diet, and will try and

get rid of the poison and prevent further poisoning. Sometimes he may think it wise to stop pregnancy by emptying the uterus, or, as it is called, inducing abortion.

ECLAMPSIA

In pernicious vomiting the danger signal is an increase of the ordinary morning sickness. You have not this danger signal in eclampsia (*eclampein*—Greek, to burst forth). Hence the value of the early symptoms of poisoning, the symptoms you get in a small degree when you are overtired. They are known as prodromal (*pro*—Greek, before; *dromos*, Greek, a running) symptoms, or warning symptoms.

Prodromal or Warning Symptoms.—They begin to show themselves somewhere between the seventh and tenth lunar-months of pregnancy. Sometimes they are not definite enough, however, to alarm the patient before the onset of the fits.

I will repeat them. They are tiredness, lethargy, headache, insomnia, flashes of light before the eyes, lack of appetite, nausea or vomiting, tremor, giddiness, depression or irritability, constipation, swollen feet and legs. Headache is especially common. Severe headache in pregnancy usually means toxæmia. The urine, too, is changed, it is sometimes high coloured and scanty, and it is extremely frequent to find albumen in it.

Albumen in the Urine.—You must know something about albumen in the urine, for it is such an important warning symptom of eclampsia. Albumen is similar stuff to the white of egg. If you take a very little raw white of egg and put it in a test-tube of water and boil the top of the

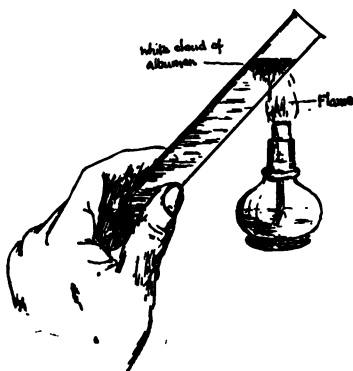


FIG. 70.

Testing for albumen in the urine.

test-tube over a spirit flame, the upper hot fluid becomes cloudy, the lower cool part remains clear. The albumen in the upper part has in fact become cooked in a finely divided state, it has turned into the solid white of egg. "The albumen has coagulated" is the chemist's phrase for this clouding.

To test urine for albumen you do the same thing. You fill a test-tube with urine and boil the upper part. You then should add a drop of acetic acid, for a certain chemical reason I need not explain. If the upper part of the hot fluid is more turbid than the cool part, there is albumen in the urine.

Significance of these Warning Symptoms.—When they are present you should warn the doctor or the patient's husband, for about twenty out of every hundred patients who get eclampsia die. Albumen in the urine is such an important sign that I advise you to test the urine of every primipara once in the seventh and eighth and twice in the ninth and tenth months if you have a chance. Primiparæ are more subject to eclampsia than multiparæ. The urine of multiparæ, however, should be similarly tested, if you are able to do so.

What the doctor does.—He sees that the bowels are opened well and that the urine flows more freely, and he puts the patient on simple food, perhaps only a milk diet. He makes his patient drink plenty of water. Of course his treatment, as does all the probable treatment of doctors I give you in this book, depends on the case also what he has found good in his own experience and the experience of his teachers. You see now, how important it is for a pregnant woman to keep her bowels open and to drink plenty of fluid.

The Fits.—Early treatment will stave off eclampsia, but frequently doctors and midwives do not see the patients early enough. The disease may come on with great rapidity with fits and often severe dropsy. The fits last from three to four minutes. The convulsions are confined, as a rule, to the upper part of the body. The patient may bite her tongue. She is unconscious. She may have fit after fit, become comatose and die, or she may recover.

Labour frequently is brought on by the eclamptic fits. Sometimes the fits appear for the first time in the first four days after labour.

Doctor's treatment.—At the Rotunda the bowel and stomach are immediately washed out, the patient is given morphia, a drug that rests the body, by slowing down the whole body mechanism. She is given no food by the mouth until she is conscious and has been free of fits some time. Other doctors put the patient under chloroform. Others, again, end pregnancy at once by cutting into the uterus from the vagina and pulling out the child and afterbirth.

Nurse's Duties.—You will have to prevent the patient biting her tongue during the fit by putting a gag in the mouth, something she cannot bite through, such as some lint tied round a spoon or a piece of firewood. When the fit is over remove the gag.

Without doctor's orders never give anything to the patient by the mouth. It will very probably run down her windpipe into her lungs. To prevent the saliva doing so, keep the patient lying on her side and only put the gag in her mouth during a fit.

The doctor in these cases or in cases of pernicious vomiting may want you to : 1, put poultices to the kidneys ; 2, give a wet pack ; 3, give nutrient enemata ; 4, give peptonized milk, therefore I think you should know how to do these things. If the patient is unconscious, he will want you to draw off the urine with a catheter every eight hours or so and measure it. You know how to do this.

To put on a poultice.—You probably all know how to make a linseed poultice in a hot basin with boiling water and how to spread it on muslin. The point I want you to remember is that a poultice, the heat of which you yourself can easily bear, may damage the skin of an unconscious patient, and therefore do not put it on very hot.

The wet pack.—A long mackintosh is laid under the patient. The patient is then rolled in a sheet rung out in cold or hot water, the mackintosh wrapped round to prevent evaporation and the patient covered with blankets.

The patient is left in the wet pack as long as the doctor thinks fit.

Nutrient Enemata.—When a patient cannot take food by the stomach she has to be fed by the rectum by means of nutrient enemata, composed as a rule of milk, starch, eggs, salt and some digesting matter such as liquor pancreaticus.

To make a nutrient enema, take the white of three eggs, milk four ounces, raw starch one ounce, salt quarter ounce, Benger's liquor pancreaticus one drachm, mix warm at 90° F., until the taste is slightly bitter, then raise to boiling point and cool.

When nutrient enemata are given, the lower bowel must be cleared once or twice a day by soap and water enemata. The nutrients must not be given until the bowel has had a rest of an hour or more from the soap and water enema. They are given through a funnel and tube. Grease the tube with glycerine. Fill the funnel and tube with the mixture. Pinch the tube and push it into the rectum and let the mixture run in slowly by raising the funnel. Let the patient be undisturbed for an hour afterwards, for there is always a danger of the nutrient being returned.

Peptonized Milk.—This is usually made with Fairchild's powders, which are prepared from pigs' stomachs. The milk is predigested in this way. The directions are on the packets of powder.

Anæmia and Hydræmia.—These are two conditions of the blood not uncommon in pregnancy and may possibly be mild symptoms of toxæmia.

Anæmia (*a*—Greek, negative; *haima*—Greek, blood).—You all know the signs. The patient is pale and bloodless. Anæmia may become extreme in pregnancy, in fact there is a pernicious anæmia as there is a pernicious vomiting, but it is rare. If the anæmia gets worse, in spite of good food, fresh air and sunlight, the patient should see a doctor.

Hydræmia (*hydros*—Greek, water; *haima*—Greek, blood).

—This is a watery condition of the blood which sometimes

leads to swelling and œdema of the legs and labia, resembling that of albuminuria or eclampsia, but there is no albumen in the urine.

Treatment.—If rest, fresh air and good food does not get rid of the œdema, the patient should see a doctor.

CHAPTER XVII

THE REMAINING ABNORMALITIES OF PREGNANCY

RETROVERSION OF THE GRAVID UTERUS

Meaning of the term.—Retroversion means a turning back, therefore this is an abnormality which depends on the pregnant uterus being turned back instead of forward. The wombs of some women are turned back so that the fundus lies in the hollow of the sacrum, instead of being turned forwards, so that the fundus touches the pubic bone. The common reason of the womb's abnormal position is the presence of adhesions, or some uterine disease or damage of the pelvic floor owing to ununited perineal tears.

Course.—As the retroverted uterus grows with pregnancy, it commonly rights itself and grows up into the abdomen like a normal pregnant uterus about the end of the third lunar-month. Sometimes it fails to do so. One common reason for it failing to do so is that the sacral promontory overhangs the pelvis more than it should. This overhanging promontory occurs in that kind of deformed pelvis known as flattened pelvis. The pregnant uterus is held down by it. It is imprisoned in the pelvic cavity, the fundus cannot rise past the pelvic brim into the abdominal cavity. This condition is known as incarcerated retroverted gravid uterus.

Consequences.—Abortion, which not uncommonly occurs on these unhealthy uteri before incarceration, sometimes prevents incarceration. If it does not, the growing uterus

fills the pelvic cavity, presses on the rectum and causes constipation, presses on the nerves and causes pain down the legs, but, above all, presses on the bladder and neck of the bladder and causes retention of urine.

When the passage of the urethra is closed by pressure, the urine continues to dribble into the bladder and the bladder fills. It gets enormously distended and may reach up to or even be higher than the umbilicus. Whilst it is filling the woman cannot pass her water for a day or more. When the bladder is stretched tight with urine, more urine will either make it burst or the pressure will overcome the pressure on the urethra, a passage will be forced and the urine will not be passed in a gush, but will dribble away. If not relieved, the bladder becomes severely inflamed (*cystitis: cystos* — Greek, bladder; *itis* — Greek, inflammation) or the bladder wall, where it is pressed upon by the uterus, may become gangrenous, the urine burst through the soft wall into the body cavity and the patient die of blood poisoning.

You see what a dangerous condition this is; as a patient may come to you with it, and as it is easy to detect, if you remember how, her life may depend on your knowledge.

Symptoms.—The patient will either tell you, or you find out for yourself, that she is three to four months pregnant

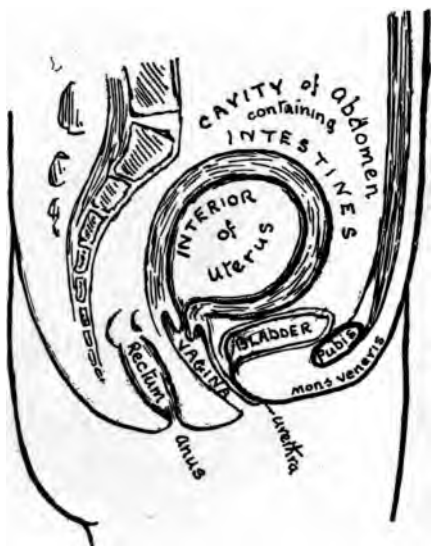


FIG. 71.— Position of normal pregnant uterus of three months.

and that she is always passing her water. Remember this point, that although she has retention, a little urine is always dribbling from her against her will. Perhaps she will give you the history of the retention before the overflow. When you examine her abdomen you find the big bladder up to the umbilicus, the bladder gives a dull note when you tap it sharply with your fingers.

Treatment.—If you are sure, send for a medical man.



FIG. 72.

Retroverted gravid uterus causing retention of urine in the bladder.

If you are doubtful, pass a catheter with absolute cleanliness. If you cannot pass the catheter easily, and it is often difficult owing to the urethra being drawn high up into the vagina, send for the doctor.

What the doctor does.—He will pass a catheter and relieve the bladder. He may have to puncture the bladder through the abdominal wall. He will then try to put the uterus straight. If he fails, he may perhaps be forced to induce abortion and so stop the pregnancy.

ANTEFLEXED UTERUS, OR PENDULOUS ABDOMEN

In the last few months of pregnancy, the abdomen may hang down much more than normal. Pendulous abdomen occurs in multiparæ who have very loose abdominal walls, in fact mere folds of skin, which cannot stay up the heavy uterus.

It also occurs when the pelvis is deformed and contracted, therefore if it occurs: 1, in primiparæ; 2, in multiparæ who have had difficult labours, send the patient to a doctor, for labour is sure to be difficult.

An abdominal belt keeps the uterus up during pregnancy.



FIG. 73.

Pendulous abdomen.

HYDRORRHŒA GRAVIDARUM

Meaning of the term.—The term hydrorrhœa comes from the Greek words *hydor*, water, and *rhœa*, a flow. In this condition gushes of watery fluid come at intervals after the third lunar-month from the uterus and escape at the vulva. The reason is not really properly understood.

Treatment.—The condition is not dangerous, but puzzling. The patient often thinks her waters have broken and that she is going to have a miscarriage. As it is very likely to puzzle you, I advise you to call in a doctor.

HYDRAMNIO, OR POLYHYDRAMNIO

Meaning of term.—The term is again compounded of Greek words, namely *polos*, much; *hydor*, water; *amnion*, amnion; that is much water in the amnion. The amniotic cavity becomes exceedingly full of liquor amnii.

Course and Symptoms.—Hydramnion occurs late in preg-

nancy. Sometimes the excess of water forms suddenly within twenty-four hours, but this is rare. Commonly the excessive water accumulates slowly. Normally the amount of liquor amnii is about two pints. A recent case of hydramnios in the Rotunda Hospital had twenty-six pints. If the accumulation is sudden, the abdomen is filled up, the bowels compressed, the stomach compressed, this causing constipation and sickness, the diaphragm is pushed up with consequent breathlessness and feeble heart. This pressure may be so great as to kill the patient. More usually the woman can adapt herself to this slow accumulation, for example, the woman with twenty-six pints was not in any particular distress. Still distress is often seen and death occurs. Premature labour is another result.

Labour is likely to be difficult, for when the waters break the sudden rush may carry the child's cord or arm down into the vagina.

How to discover Hydramnios.—First you will notice the uterus is much rounder and bigger than it should be according to the period pregnancy has lasted. Secondly, the fluid obscures the outline of the child and the child's heart is badly heard. Thirdly when you lay your hand on one side of the uterus and tap the other with your fingers you will feel the wave of fluid thus produced.

Treatment.—If the woman is in distress, send for the doctor. He may have to bring about the birth of the child to relieve her.

As regards hydramnios and labour I shall have more to say later. You will probably find the case abnormal and send for the medical man. You feel no presenting part, or if the membranes have ruptured you will very likely have a malpresentation. The doctor in these cases can rupture the membranes in such a way as to allow the waters to run away slowly.

Oligo-hydramnios (*oligos*—Greek, a little).—This is a condition in which there is too little liquor amnii. It is rare. Its effects are twofold : 1, there is no proper bag of waters to dilate the os and therefore the first stage of labour is slow ; 2, adhesions may form between the foetus

and the membranes, which lead to great deformity of the fœtus.

As, however, you cannot diagnose the condition before the birth of the child, the only value of this knowledge is that when you see a child so deformed by adhesions you will know the reason.

INTRA-UTERINE DEATH OF THE FŒTUS

The fœtus may die within the uterus. A disease known as syphilis, or specific disease when we speak of it to patients, is the commonest cause of intra-uterine death of the fœtus, of abortion and miscarriage which follow intra-uterine death, and of stillbirth. Sometimes the fœtus dies in the uterus and is not discharged. Its death does not lead to labour pains, but its presence is bad for the mother. The fœtus is apt to putrefy and in other ways affect the mother. Therefore the proper treatment of the doctor is to empty the uterus at once and the duty of the midwife called to such a case is to discover that the child is dead.

How to discover intra-uterine fœtal death.—If the fœtus dies before the signs of fœtal life are evident, namely fœtal parts, movement and heart, you diagnose it, as a rule, by the signs of putrefaction, namely a brown discharge issuing at the vulva, with fever and illness of the mother, there is also an absence of progressive signs of pregnancy, such as increasing enlargement of the uterus and breasts.

You may suspect intra-uterine death, when the mother states that she no longer feels the movements of the child, and that her abdomen feels cold. A caution is here necessary, for a dead child may roll about in the uterus and produce the sensation of fœtal movements, but on being questioned the mother can usually distinguish between this rolling and the lively kicks of the child. Again, if on examination from the sixth lunar-month onward you, though practised at hearing fœtal heart sounds, fail to hear the fœtal heart, be suspicious of death of the fœtus, but do not mention your suspicions to the

mother, for she may develop the cold feelings and dyspepsia that accompany death of the child, owing to your suggestion.

You can make sure by measurements. See first that the woman empties her bladder and rectum each time, by asking her to take medicine and when you come next day, getting her to pass her water. Measure the greatest girth round her uterus with a steel tape measure, measure from the lower end of the breast bone to the top of the fundus and from the top of the fundus to the pubes. Note your measurements in a book. Measure her again in a week. You may notice a difference. If you do not, measure in a fortnight and again in three weeks. The uterus will probably be actually smaller. It certainly will not grow. Listen each time for the foetal heart and try for foetal movements. Look at the breasts and you will find they get flabby. If a brown discharge appears at the vulva, it confirms your suspicions. Tell your fears to a doctor, as soon as they are definite, and show him your various measurements. A dead foetus macerates, it becomes sodden and loose and its skin peels off. It may macerate quickly. Very rarely it dries up and mummifies, and this may occur with one of twins. It becomes flattened out by the live twin and forms a parchment-like foetus, the so-called foetus papyraceus (*papyrus*—Latin, parchment).

TUMOURS AND PREGNANCY

It is scarcely to be expected that a midwife could detect tumours, either innocent, or cancerous. There is an innocent little tumour that hangs down through the cervix like a grape and is known as a polypus. It bleeds from time to time and the blood issues at the vulva.

A woman who has cancer of the neck of the womb may become pregnant. A little blood and foul brown or yellow discharge from the vagina will be the probable signs. Once again, when you find bleeding, or foul discharge coming from the vagina you should insist on the woman seeing a doctor.

GENERAL DISEASES AND PREGNANCY

Consumption.—Consumption does not prevent a woman from becoming pregnant. Often the mother improves whilst carrying the baby, but she is apt to go down hill after the baby is born, and for this reason she must be spared the strain of lactation and not suckle her child.

Heart Disease.—Pregnancy and labour is a great strain on a diseased heart. If a woman with heart disease or supposed heart disease becomes pregnant, she should consult a doctor.

St. Vitus' Dance, or Chorea.—St. Vitus' Dance may be made very much worse by the concurrence of pregnancy.

Venereal Disease.—Should you ever in examining a pregnant patient find tender lumps in her groins, sores on the vulva, swollen labia or a yellow vaginal discharge, advise her strongly to see a doctor. Both she and her child may die, if she is not skilfully attended throughout labour.

For your own safety, in all such cases you should wear gloves and be extremely careful to disinfect your hands whenever you have touched the patient.

Infectious Diseases.—A pregnant woman may get scarlatina, measles, pneumonia, smallpox, etc. If she is very ill, she will probably abort.

CHAPTER XVIII

ABNORMAL LABOUR

GENERAL CONDITIONS OF DIFFICULT DELIVERY.— SECONDARY UTERINE INERTIA—RUPTURE OF THE UTERUS

GENERAL CONSIDERATIONS

What is Abnormal Labour?—Abnormal labour includes (1) all cases of vertex presentation in which the child and afterbirth are not delivered without complications within twenty-four hours, and (2) all other presentations, whether complicated or delivered without complication.

Factors upon which Abnormal Labour Depends.—The factors which give rise to abnormal labour may be :

1. Large size of the child.
2. Abnormal ossification of the child's head.
3. Presentation other than vertex or persistent Vertex III and IV.
4. Small or contracted pelvis.
5. Obstruction from tumours.
6. Uterine inertia, that is, either a feeble or exhausted uterus.
7. Conditions preventing proper dilatation of the os.
8. Abnormal third stage.

1. **Large size of the child.**—The foetal measurements you have learnt were average measurements, so that you could understand what will probably happen. Individual babies may be larger than the average measurements ; the birth of large babies will be more difficult. The head passes with greater difficulty and, therefore, even though it presents by Vertex I or Vertex II, labour may be so prolonged during

the second stage, that symptoms arise which make you send for the doctor to deliver the child. Another reason why the child is too large may be that it has some foetal disease which gives it dropsy or a tumour. Such cases are rare, and you cannot detect the condition, but you will find that labour is either extremely slow or is actually obstructed, that is to say, there is no advance of the foetus at all with the pains. You should then send for the doctor.

2. **Abnormal Ossification of the Child's head.**—This point need not detain us. Some foetal heads have thicker and firmer bone than is usual, and these hard heads do not get shaped and moulded by pressure, which considerably diminishes the width of a more pliable head, as explained on p. 64. Consequently difficult or obstructed labour may arise. These first two factors will not be further discussed. The conditions of obstructed or delayed labour they produce will however be fully discussed.

3. **Presentations other than Vertex.**—Not all abnormal presentations lead to difficult delivery, for difficult delivery depends chiefly on the size of the child's head and the size of the pelvis. The former may be smaller and the latter may be larger than the average. For example, I have seen a full-term baby with brow presentation born very easily in a primipara, who had an abnormally large pelvis. Indeed with a small child, a large pelvis and strong uterus, what is called precipitate labour sometimes results, with this I shall deal later. But when the presentation is not a vertex, you may expect some difficulty.

The difficulty in nearly all cases arises in the passage of the child's head through the inlet of the pelvic canal, and therefore I will run over the measurements again of the various presentations.

The inlet of the pelvis is $5 \times 4\frac{1}{2} \times 4$ ins. (the transverse diameter being encroached on by muscles measures $4\frac{1}{2}$ ins.).

Vertex I and II, measure $3\frac{3}{4} \times 3\frac{3}{4}$ ins.

Vertex III and IV, measure $4\frac{1}{2} \times 3\frac{3}{4}$ ins.

The anterior fontanelle presentation measures, $4\frac{1}{2} \times 3\frac{3}{4}$ ins.

Brow, measures $5 \times 3\frac{3}{4}$ ins.

Face III and IV, measure $3\frac{3}{4} \times 3\frac{3}{4}$ ins.

Face I and II, measure ($3\frac{1}{2} \times 1\frac{1}{2}$ for the neck) $5\frac{1}{4} \times 3\frac{1}{4}$ ins.

The after-coming head of a Breech, moulds well and measures $3\frac{1}{4}$ or $4 \times 3\frac{1}{4}$ ins.

Transverse presentations have no practical measurement.

Twins may present especial difficulties.

Presentation of the umbilical cord has also its especial difficulties.

Thus you see Vertex I and II, Face III and IV (with chin in front) and the after-coming head of a Breech should be delivered easily; this is borne out by experience.

Persistent Vertex III and IV and anterior fontanelle presentations are difficult of delivery.

Brow and persistent Face I and II (with chin behind), well-nigh impossible of delivery, even with great moulding.

Transverse, quite impossible of delivery.

4. **Small or Contracted Pelvis.**—Obviously any condition which makes either the inlet or outlet of the pelvis smaller than normal makes delivery more difficult. Such narrowed pelves do exist, and are not uncommon in big manufacturing cities such as Glasgow. They are rare in women of Ireland.

5. **Obstruction from Tumours.**—A tumour (*tumor*—Latin, a swelling) may grow from or fall into the pelvic cavity and prevent the delivery of the child.

6. **Uterine Inertia.**—The uterus itself may be at fault, for its contraction is the force by which the os is opened and the child pushed out. Sometimes the uterus is feeble from the start, sometimes it gets exhausted during labour and the pains pass off. Both conditions are known as uterine inertia (*iners*—Latin, inactive).

7. **Conditions Preventing Proper Dilatation of the Os.**—The os has to open fully to permit of the passage of the child. The even pressure of the bag of membranes is the fluid wedge that opens the os in the normal state. If the membranes break early, dilatation of the os without this fluid pressure will be extremely slow.

There is also an abnormal condition of the cervix which prevents its full dilatation. It seems to be incapable of full dilatation. It cannot stretch properly. The condition is usually due to an operation that has been performed on

the cervix, the so-called acquired stenosis (*stenos*—Greek, narrow). More rarely there seems to be no reason. It is then known as congenital stenosis.

8. **Abnormal Third Stage.**—There is no need to discuss this now.

Where Difficulty in Delivery Occurs.—It is obvious that difficulty in delivery must occur either in the attempt of the presenting part to enter and pass (1) the brim ; (2) in the pelvic cavity ; (3) at the outlet. These difficulties can from a practical point of view be summed up into: (1) signs that arise when the presenting part does not enter the brim ; (2) signs that arise after the waters have broken, when the presenting part fails to enter the brim, or having entered the brim progresses not at all or with great difficulty.

I want you to consider difficult labour from these practical points of view, before we enter into more detail as to abnormal labour. Again, do not confuse abnormal labour with difficult labour. Not all abnormal labour is difficult labour. But upon your readiness in detecting that, although labour has begun, the presenting part has not entered the brim ; or that, having entered the brim, proper progress is faulty, will depend your value as a nurse both to the patient and the doctor in difficult labour.

1. **Signs that Arise when the Presenting Part does not Enter the Brim.**—You remember that when the presenting part enters the brim it is seized by the lower uterine segment and fixed. I entered into the explanation of the fixing of the presenting part at some length on p. 80. I did so because of its great importance. Now if the presenting part is not fixed by the lower uterine segment, if it is the head, you can move it about or “ballotte” it freely between the pains. You take hold of it by Pawlik’s grip and push it easily from side to side between the pains. In transverse presentation, sometimes there is no foetal part dipping into the brim and you feel nothing by Pawlik’s grip or by pelvic palpation. Again, in normal labour, the fore-waters are shut off from the after-waters by the close fit of the lower uterine segment to the fixed presenting part. If there is no fixed part to shut off the communication of the fore-

and after-waters during a pain, the weight of the whole body of the after-waters is forced on to the advancing bag of membranes. The bag consequently protrudes like a sausage through the os, instead of the watch-glass shaped bulging of the fore-waters during a pain when a part of the child is fixed. This weight of all the waters during a pain first bulges the bag of membranes like a sausage, so stretched is it, and then causes its rupture. Early rupture of the



FIG. 74.



FIG. 75.

Bulging of the after-waters (Fig. 75 on right, brow III presentation) due to non-fixing of the head compared to normal bag of waters (Fig. 74 on left, Vertex I presentation).

membranes, therefore, is a common and unfortunate feature of these cases. The rush of the after-waters, when rupture occurs, is apt also to carry down something small, such as a limb, or the umbilical cord, through the os.

Finally, before the waters break, as the presenting part has not entered the brim, it is very high up, and consequently you will either not be able to reach, or can perhaps just touch, it with your two fingers, when you make a vaginal examination.

These, then, are your three cardinal signs that, although labour has begun there is something wrong : 1, the presenting part is either absent with Pawlik's grip, or can be made to "ballotte" freely between the pains ; 2, you feel the membranes, if unbroken, bulge down through the os with the pains like a sausage (caution : you must touch them lightly during your vaginal examination for they rupture very easily) ; 3, with your fingers in the vagina you cannot reach the presenting part, but pass your fingers into a partly dilated but empty cervix.

They are so important I will repeat them. When you get ballottement between pains + sausage membranes + no presenting part felt vaginally, you should send for a doctor.

2. Signs that arise, after the waters have broken, when the presenting part fails to enter the brim, or, having entered the brim, progresses not at all, or with great difficulty.—Before labour begins nothing serious to the child or uterus can happen, except antepartum hæmorrhage, eclampsia, and the other untoward occurrences with which I have dealt. But when labour is in progress you can take it as a rule that nothing serious will happen before the waters break. They form a water bed by which the child is protected, and the pains before the waters break are never equal to the strength and violence of the pains which set in after the waters have broken in the attempt to expel a child against difficulties.

Hence the importance of the three cardinal signs I have given you, for they warn you to call a doctor before serious symptoms have arisen.

When the waters break, the after-waters may escape with a rush, although this is largely prevented by the woman lying down, for when the woman is horizontal the uterus is more or less horizontal too. In this rush a small thing like an arm, leg, or more frequently the umbilical cord, is carried down into the vagina and may appear at the vulva. Prolapse of the arm and cord are both serious conditions. Prolapse of the leg is less serious. These conditions are dealt with in future chapters.

Apart from prolapse the presenting part may never enter

the brim. The uterus tries to push it down by contraction after contraction, but fails. Then, if the case is left, one of two things happens, either, 1, the uterus becomes exhausted (secondary uterine inertia) and ceases to contract ; 2, the uterus goes on trying and eventually ruptures in its vigorous endeavours to contract sufficiently hard to accomplish an impossible delivery. When, therefore, you get a case in which the waters have broken, but you cannot feel a presenting part with your fingers, send for a doctor.

On the other hand, the uterus may succeed in pushing the foetus either entirely through or partly through the brim. Having pushed it through the brim it cannot push it past the outlet. Three things may happen, if the case is left : 1, exhaustion of the uterus may come on ; 2, the uterus may go on trying until it ruptures ; 3, it may, after many hours, push out a much moulded child past the vulva, probably with a large caput, a big perineal tear and a big chance of postpartum hæmorrhage resulting from an exhausted uterus that can neither contract nor retract any longer (p. 35). Thus the conditions that arise are : 1, secondary uterine inertia ; 2, obstructed labour which, if unrelieved, results in rupture of the uterus.

SECONDARY UTERINE INERTIA

Secondary uterine inertia is feebleness or absence of uterine contractions, following strong contractions after the waters have broken. It is exhaustion of an uterus which has tried to deliver a child, and failed.

Results and Treatment.—The mother is herself exhausted, for the strong muscular efforts of the uterus are comparable to the strong muscular efforts of running a race. She tends to sleep. This is the best thing that she can do. She sleeps, and the uterus recovers its power to retract and contract. You must inform a doctor in these cases.

He will probably let the patient sleep, or make her sleep with opium, and when the uterus has recovered its power he will deliver the child. Delivery of a child from an exhausted uterus is dangerous, for it is apt to result in serious postpartum hæmorrhage.

OBSTRUCTED LABOUR WHICH, IF UNRELIEVED, RESULTS IN RUPTURE OF THE UTERUS

The strong uterus either does not become exhausted, or becomes exhausted, rests, and again breaks out into vigorous action. The uterine muscle, stimulated by the difficulty it encounters, puts forth greater and greater effort. The pains last longer, are stronger, and more frequent. Relaxation between the pains is less and less complete, and eventually the contractions of the uterus become continuous or tonic. The uterus moulds itself to the child, but so tense and hard is the muscle wall that you cannot feel the foetal parts. The hard uterus is often very tender.

BANDL'S RING also forms. Bandl's ring is the edge or border of the thickened, hard, contracted muscle that forms the upper uterine segment, which separates it from the thinned and stretched lower uterine segment in which rupture takes place. You can both see and feel it as a ridge running obliquely across the lower abdomen. When it is $2\frac{1}{2}$ ins. above the pubic bone, the lower uterine segment is so stretched that it will probably rupture. You can distinguish Bandl's line from the outline of a full bladder by passing a catheter.

Vaginal Signs.—On making a vaginal examination you find the labia swollen, the vagina unnaturally hot and dry. The presenting part is either out of reach, or is greatly obscured by the swelling and œdema known as a *caput succedaneum*. With a pain there is no advance of the presenting part, and when the pain relaxes you find you cannot push it up. It has, in fact, jammed. Possibly you may find either an arm or the cord prolapsed as well.

Effect on the Mother.—The woman herself is profoundly affected by the uncontrollable violence of the contractions of the uterus. She experiences the agonizing pain well known to every one as cramp, only she has cramp in her womb and not in her calves. As the calves become tender from cramp, so is her womb very tender. She may shriek out with pain, if you press on her abdomen. She is full of anxiety and acutely conscious of the terrible crisis through

which she is passing. Her eyes are haunted by the fear of impending death, her face is drawn and pinched with pain and exhaustion, her lips and mouth are dry, with sordes on her teeth. She moans continuously, her breath is quick and panting, her rapid pulse grows more rapid and feeble, sometimes uncountable, and her temperature continues to rise. Only when rupture occurs does relief come to her, and then it is the relief of profound shock, or the release of death.

Effect on the Child.—The child is squeezed by the uterus and the placental circulation is greatly interfered with, consequently the child is in danger of death. It often kicks and struggles violently. Solid meconium (green fæcal matter) is squeezed from its bowels and appears at the vulva. Its heart-beat slows to below 120 or is increased to over 160. Eventually the child dies.

Signs of Rupture.—The lower uterine segment gives way. The tear may extend up to the fundus or down into the vagina. Sometimes the child is discharged into the body cavity and you can feel it through the abdominal wall with surprising ease.

By vaginal examination you find the presenting part has receded. Blood may pour from the vulva.

Effect on the Mother.—Great hæmorrhage, either internal or external, or shock (profound nervous prostration) may kill her very quickly. She may later die of peritonitis. Rarely she recovers.

At the time of rupture, the change of aspect in the mother is striking. She may cry out that something has given way inside her. She then passes from a condition of acute tension to one of profound shock. Her face is no longer pinched and drawn, but smooths out with the relaxation of the fainting condition. The hot congested face of exertion becomes pale and cold. A clammy sweat appears on her forehead and cheeks. Her breathing, no longer panting, is now soft, shallow and almost inaudible, except for an occasional moan. She no longer cries out with pain, but lies back prostrated, relaxed, almost lifeless. Her pulse is very feeble and quick, if she is bleeding, or in some

cases may be feeble and slow. Her temperature may be subnormal.

What is a Nurse to do?—I hope I have impressed you sufficiently with the need of detecting obstructed labour and sending for a doctor, who brings about delivery before rupture of the uterus occurs. How are you to know when to send for a doctor? You should send under the following conditions.

Before Rupture of the Membranes.—When the three cardinal signs are present, namely: 1, ballotting, of the presenting part, or no presenting part, by Pawlik's grip or pelvic palpation; 2, no presenting part felt by two fingers; 3, sausage-shaped bag of membranes.

EXCEPTION.—There is one exception to the third sign, namely, when you are SURE by abdominal palpation the case is one of breech (in which presentation the membranes bulge) and the woman has had a child before without difficulty. Such a case will probably present no difficulties. I deal with breech in the next chapter.

After Rupture of the Membranes.—

1. If the cord comes down.
2. If an arm comes down.
3. If you cannot reach the presenting part with two fingers in the vagina.
4. If you feel the presenting part swollen with a large caput, and find that it does not move down with a strong pain, and you cannot push it back between the pains.
5. If the patient's temperature and pulse both rise up to or over 100. A rise of pulse without rise of temperature may be due to nervousness.
6. If, although the child's head presents, solid meconium is coming away, or if, between the pains, you distinctly count the foetal heart below 120 or above 160.
7. If the second stage with the head presenting has lasted two hours, and in spite of good pains no definite progress seems to be made, or if, with weak pains, the second stage has lasted four hours.
8. If secondary uterine inertia sets in.

These eight clauses will give you all the signs by which you may detect cases of difficult or impossible delivery, in all such cases you must send for a doctor. If you remember them you need never be nervous in attending cases, for symptoms do not come on with great rapidity, and you practically always have plenty of time to discover that something is wrong, to send for the doctor, and thus save the woman's life, and most probably the baby's as well. Another rule is *always keep the woman in bed in these cases*. In the first stage, this tends to prevent early rupture of the membranes. We will now consider in detail the different kinds of abnormal labour.

CHAPTER XIX

ABNORMAL LABOUR

UNREDUCED OCCIPITO-POSTERIOR, FONTANELLE, BROW, FACE AND TRANSVERSE PRESENTATIONS

UNREDUCED OCCIPITO-POSTERIOR PRESENTATIONS, VERTEX III AND IV

Frequency.—In the last three years at the Rotunda, with 5,630 deliveries, persistent occipito-posterior cases have occurred 1 in 144.

Meaning of term.—You remember the rule of the mechanism of labour, namely, that when the most advanced part of the fœtus reaches the pelvic floor, it is pushed to the front. Sometimes in Vertex III and IV, owing especially to feeble pains causing deficient flexion, the front part of the head is more advanced than the occiput, and is turned to the front under the pubes.

Diagnosis.—The diagnosis of Vertex III and IV has already been considered under normal labour (p. 98 and fig. 49, p. 99). By vaginal examination you feel the anterior fontanelle easily in front and the posterior fontanelle with almost equal ease behind.

Result.—The occipito-frontal diameter of $4\frac{1}{2}$ ins. takes the places of the suboccipito-frontal 4 ins., or suboccipito-bregmatic $3\frac{3}{4}$ ins. Labour will, therefore, be tedious, especially as the condition is often due to feeble pains, and may be obstructed. A bad tear of the perineum is likely.

Treatment.—The feeble pains are the usual cause. Leave the case alone unless the mother's temperature and pulse

rise to 100 or over. A large caput will not form as long as pains are feeble, for the head will not be tightly jammed

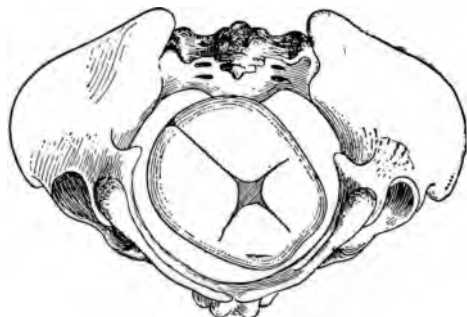


FIG. 76.

Vertex IV, as felt by vaginal examination.

into the pelvic cavity by feeble contractions. If the patient sleeps, so much the better. When she wakes up the pains will probably be stronger, and the head will flex more and turn to Vertex I and II, or be expelled without turning.

If you see the head on the perineum, press on the fundus with contractions, and so help the pushing force of the uterus.

Some books recommend you to increase flexion by pressing the forehead up during a pain with your finger in the vagina. You can do this, but I desire you not to make special vaginal examinations to do it. Pressure on the fundus is a cleaner and more rational way of increasing flexion. Some also advise you to get the patient to lie on the side to which the occiput points. Others advise you to get the patient to lie on the side to which the occiput does not point. You can let the patient lie on whichever side she likes.

If signs of obstructed labour arise, or if the second stage has lasted two hours with good pains, or four hours with weaker pains, send for the doctor.

He will probably deliver the child by forceps.

ANTERIOR FONTANELLE

The presentation of the anterior fontanelle may be looked upon as a variety between vertex and brow. By the abdomen you find that the child's body is in the same position as in a vertex presentation.

By the vagina, you feel the anterior fontanelle is the most advanced part of the foetus, even though the back and occiput are to the front.

Result and Treatment.—Practically the same diameter as in unreduced occipito-posteriors has to pass, namely, the occipito-frontal, $4\frac{1}{2}$ ins. The head is made dome-shaped by moulding.

The treatment is the same. Press on the fundus with the pains during the second stage, if the head is low, and watch for the indications for a doctor's help.

BROW

Frequency.—In the 5,630 Rotunda deliveries brow occurred 1 in 614. Brow is the rarest presentation.

Causes.—In a brow the head is neither extended nor flexed, but is between the two positions. It is half-way between vertex and face, which occur with full flexion and full extension.

The common causes are those that prevent proper flexion of the head and tend to cause extension. These causes are : 1, obliquity of the uterus ; 2, flattened inlet of the pelvis.

How Obliquity of the Uterus causes a Brow Presentation.—In obliquity of the uterus, the fundus and body of the uterus fall either to the right or left side, or forwards. The latter form of obliquity is known as pendulous abdomen.

Obliquity of the uterus, as you see in the diagrams (p. 60), will either make the child's occiput lie more over the inlet than normal, or will make the brow lie over the inlet

How a Flattened Inlet of the Pelvis causes a Brow Presentation.—The greatest width of the front of the head is $3\frac{1}{2}$ ins. (bitemporal diameter), the greatest width of the back of the head is $3\frac{1}{2}$ ins. (interparietal diameter). Therefore, if the inlet is flattened from before back, which makes its transverse diameter large and the antero-posterior diameters smaller than normal, the front of the head will tend to pass into the brim before the back of the head, and a brow or face presentation result.

Importance of these Two Causes.—The importance of the first cause, namely obliquity, is that when you find the

uterus pendulous or much to one side or another in labour, whether in the first or second stages, you should keep the uterus straight by pads, made of towels or soft stuff, and a tight binder.

The importance of the second reason is that flattened pelvis adds all the more difficulty to the case. If a patient has had one baby easily at full term, she is not likely to have a flattened pelvis. It is important therefore to get a good history, both for your own and the doctor's satisfaction.

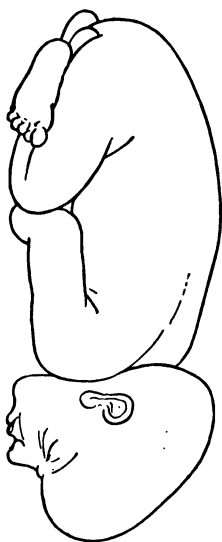


FIG. 77.
To show moulding of
brow presentation.

Results. — The mento - vertical diameter of 5 ins. and the interparietal diameter $3\frac{1}{4}$ ins. have to pass. The first is too big to pass unless the pelvis is exceptionally large. Four things may happen in brow : (1) flexion may increase and the brow become a vertex ; (2) extension may increase and the brow become face. These two happen before fixing of the head ; (3) the brow may be born as brow, the brow bulging greatly with moulding ; (4) the child will not be born naturally. The last is the commonest result and for this reason when you diagnose brow, you must call a doctor.

How to Diagnose Brow. — By abdominal palpation you feel the limbs and back much as you do in vertex. By Pawlik's grip, you find the head feels very large and has not sunk into the brim, that you can "ballotte", it and that you feel the prominences of chin and occiput at the same level. By vaginal examination you will find no presenting part with two fingers.

If the brow enters the brim, you feel the prominent brow, probably with a big caput, but distinguished by feeling the eyebrow ridges on one side of the prominent brow and the anterior fontanelle on the other.

Possibly you will not diagnose the presentation accurately, nor does it matter much, as long as you discover the three cardinal signs before the waters break : (1) a ballotting head ; (2) no presenting part vaginally ; (3) sausage-shaped bag of membranes ; and after rupture you discover the non-descent of the head or signs of obstructed labour.



FIG. 78.

Brow IV, as felt by vaginal examination.

Treatment.—Always send for a doctor, for delivery of a brow presentation naturally, is extremely rare. Keep the patient

in bed till he comes to prevent the early rupture of the membranes. Delivery is sure to be difficult. The doctor will try either forceps or turning the child ; that is, he pushes up the head with his hand in the vagina, pulls down a foot and delivers the child as a breech. Sometimes a doctor is forced to perforate a dead child's head. He gouges a hole in the child's head, washes out the brain, breaks the bones of the skull with crushing instruments and delivers the child.

If you send for him early before rupture of the membranes he may be able to change the presentation to a vertex and so allow normal delivery.

FACE PRESENTATIONS

Frequency.—In the Rotunda figures, face occurred 1 in 704. Face, however, is according to most statistics more common than this. Dr. Collins, a master of the Rotunda, found face 1-497.

Causes.—The common causes of face presentations are the same as those of brow, namely : (1) obliquity of the uterus, and (2) flattened inlet of the pelvis. Obliquity of the uterus tends to make the face or occiput lie over the inlet. If

the face, then it presents. Flattened inlet of the pelvis permits the advance of the front of the head rather than the back of the head, the head extends and face presentation results.

Results.—You remember in the mechanism of labour, if the chin was to the front, as it is in Face III and IV, the diameters that pass are the cervico bregmatic, $3\frac{1}{4}$ ins., and the interparietal, $3\frac{1}{4}$ ins. Delivery is therefore easy. In Face I and II, the chin usually, by complete extension, becomes the most advanced part of the foetus and turns to the front.

So you have this reassuring knowledge, that in the majority of cases, face presentations are delivered naturally.



FIG. 79.—Moulding and “caput succedaneum” of face delivery

Unfortunately, in a few cases extension is not complete, especially when the pains are feeble. In fact extension is not complete for the same reason that flexion is not complete in persistent occipito posterior presentations. The result

is that the forehead and not the chin turns to the front, and this result is exceedingly serious. As the foetus advances the neck and upper part of the chest jam down behind the head, and further advance becomes impossible. Fig. 31, p. 63, shows how impossible this is. Obstructed labour results.

The face is often very blue and bloated by the caput succedaneum and the occiput is pressed out behind by moulding. The bloated aspect of the face, which is very hideous, disappears within a day or two of birth, but the moulded bones take much longer to return to a more normal shape.

Diagnosis.—The diagnosis of face is not so difficult as that of anterior fontanelle or brow, for it is markedly different from vertex. The chief difficulty of diagnosis lies in its rarity, so that none of us get much practice in examining face presentations.

Abdominal Examination.—Imagine the head extended



FIG. 80.—Face I, as felt by abdominal palpation.

and the back hollowed. The condition is exactly the reverse to the flexed head and rounded flexed back of the vertex.

Therefore you are not surprised to find a face shows by abdominal examination the opposite of a vertex presentation, and if you remember the vertex you can remember a face too. In both you feel the breech at the fundus.

In vertex you trace the breech easily to the rounded

back. In face you have difficulty in tracing the breech to the hollowed back. In vertex you hear the foetal heart best when the back is in front. In face you hear the foetal heart best when the back is behind, for the hollowed back pushes the chest forward against the abdominal wall.

In Vertex I you hear it best to the left of the middle line. In Vertex II to the right.

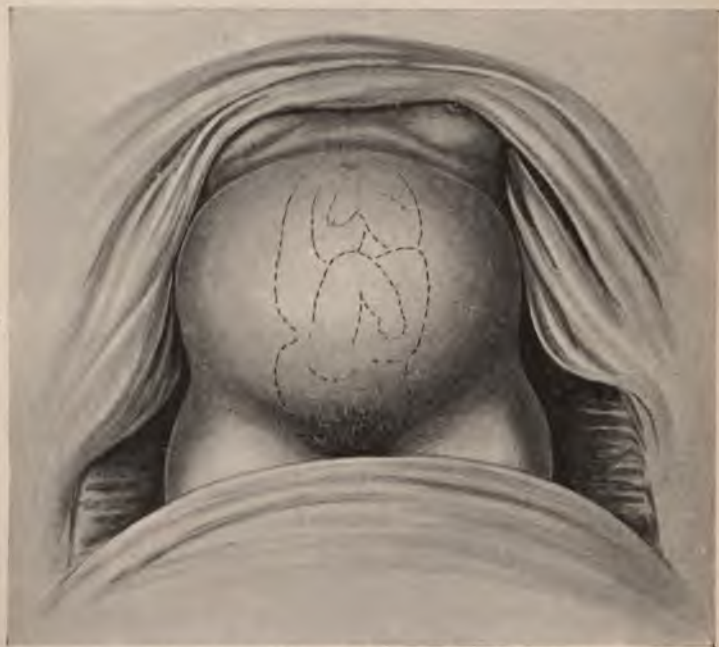


FIG. 81.—Face III, as felt by abdominal palpation.

In Face IV with the back to the left you hear the heart best to the right of the middle line below the umbilicus, for the prominent chest is turned to the right ; In Face III to the left.

In Face III and IV, however, you feel the limbs to the ont as you do in Vertex III and IV.

It is when you examine the head by Pawlik's grip and

pelvic palpation that the distinction between face and vertex is most obvious.

In vertex you feel the forehead more easily and higher up than the occiput. You feel the back on the same side as the occiput.

In face you feel the prominent occiput more easily and higher up than the chin. Moreover, the prominence is on the same side as the back and not on the opposite side, and it is separated from the back by the deep groove of the neck.

Vaginal Examination.—When there is a flattened pelvis, you may not be able to feel anything with your two fingers in the vagina, except a sausage-shaped bag of membranes. In such a case you will also find a ballotting head.

But when the membranes have ruptured and the face has descended into the brim, you may be very puzzled by what you feel. The caput succedaneum swells the eyes, nose and lips and you may think you are feeling a breech.

The determining points are : (1) you have already felt the breech at the fundus ; (2) put one finger between the child's lips into its mouth, only be careful not to mistake an eye for the mouth, and feel the ridges of the toothless gums. These are quite distinct. Feel them in the next young baby you see and you will not forget the feel of them in a face presentation. You can also feel the tongue, the bridge of the nose and the ridges of the eyebrows, unless the caput obscures them. If the face is high up you may mistake the mouth for the anus. If you reach the gums you can have no doubt. If you

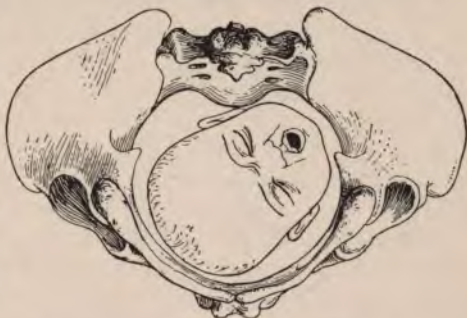


FIG. 82.

Face I, as felt by vaginal examination.

cannot, the distinguishing points are that the muscle surrounding the anus will grip your finger and your finger will often be stained by the dark green meconium. But you ought to be able to distinguish between breech and face presentations by your abdominal palpation.

Treatment.—If you get the three cardinal signs of abnormal presentation, or if you diagnose a face presentation before rupture of the membranes, send for a doctor.

If the membranes have ruptured, there is only one condition in which you need not send for the doctor, namely when you are sure the chin is to the front and the face is coming down with the pains.

A doctor treats the case according to the conditions



FIG. 83.

Face III, as felt by vaginal examination.

he finds present. In the early stages he may turn the child or try to change it to a vertex. In the later stages he will probably leave it alone, or try forceps. If the chin is behind, the head and neck jammed, and the mother in danger, he may have to perforate the child's head and break up the skull.

As in all cases of labour in which you send for the doctor keep the patient in bed until the doctor comes. In the first stage this may prevent rupture of the membranes, which, being sausage shaped, and supporting the after-waters as well as the fore-waters, are liable to rupture, if the patient does not lie quietly.

CROSS BIRTHS OR TRANSVERSE PRESENTATIONS

Frequency.—The Rotunda 5,630 deliveries give the frequency of transverse presentations to be 1 in 331.

Causes.—

1. An oblique uterus may push the presenting head into the iliac fossa on the opposite side to the fundus.
2. Contracted and flattened pelvic inlet often results in cross-births and other malpresentations.
3. Hydramnios—for the head of a floating child does not fix, and when the waters break an arm may be carried down or a shoulder over the brim.
4. One or both children of twins may be transverse. The presence of one twin disturbs the lie of the other.
5. Premature or dead children often malpresent.
6. Uterine tumours bulging into the cavity of the uterus may interfere with the lie of the child.
7. Placenta Prævia, partly filling the lower uterine segment, interferes with the normal lie of the child.
8. The slack uterus of a multipara is less likely to maintain a foetus in its proper position than the firm uterus of a primipara. Therefore cross births are more common in multiparæ than in primiparæ.

Significance of these Causes.—I may say at once that it is far more important for you to be able to detect a transverse lie when it is present than to remember these causes.

But you should correct obliquity of the uterus that is at all marked by pads and a binder. You should find out if the woman has had a child previously without difficulty so as to exclude the possibility of contracted pelvis, which leads to all sorts of disasters. You should also send early for the doctor in all cases of hydramnios.

Results.—Except with small premature or dead children (p. 64), cross-births are never delivered naturally. Rupture of the uterus will result if the patient is left without calling in a doctor. The signs of obstructed labour at any rate will be present, though you fail to diagnose the lie.

Diagnosis.—**ABDOMINAL EXAMINATION.**—Very likely by the look of the abdomen you will suspect that something is wrong, for the uterus looks crooked.

By Pawlik's grip and pelvic palpation you fail to feel

any presenting part, one of the three cardinal signs. You now have to feel the head and this is often not easy. It may be in one or other iliac fossa, in the flanks or above the umbilicus. You distinguish it : (1) by its size and hardness ; (2) by feeling the groove formed by the neck between it and the back ; (3) by being able to move the head between the pains on the neck without moving the back.

VAGINAL EXAMINATION.—Cross-births give the three cardinal signs before rupture of the membranes, so that you are sure to detect that something is wrong.

You will fail to reach the presenting part with two

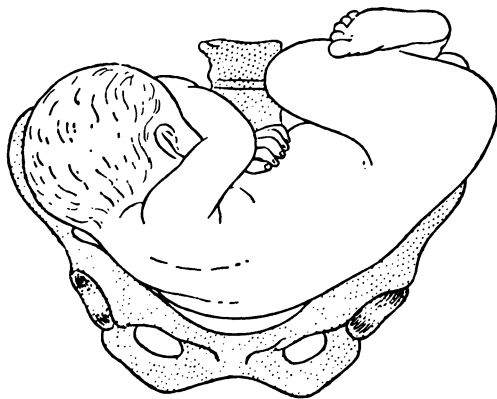


FIG. 84.—Transverse II.

fingers in the vagina and you will get the sausage-shaped protrusion of membranes, which you should touch lightly, for they are liable to early rupture.

After rupture of the membranes you may still be unable to reach anything, or the hand and arm

may come down into the vagina, or the hand, elbow or commonly shoulder be pressed down into the cervix.

At any rate you do not feel a head. The only fear is that you may arrive at the case after the membranes have ruptured and mistake the case for one of breech, knee or foot, neither of which are serious, and only suspect something wrong when you find there is no advance, or by noting carefully the pulse and temperature you find they are both beginning to rise.

It is necessary for you to know how to distinguish a shoulder, a hand from a foot, and an elbow from a knee.

I will tell you the distinctions, and I strongly advise you to make yourself familiar with these points by examining them in new-born babies with your eyes shut, imitating in fact the conditions you will meet with at a transverse presentation.

THE SHOULDER.—You may mistake the shoulder for a knee or the sacrum. Distinguish it by tracing the outline of the armpit, feel the collar bone and above all you can usually feel the ribs near it, then you will be sure.

THE HAND FROM THE FOOT.—When an arm has prolapsed into the vagina, you will of course have no difficulty in distinguishing the hand. But it is not so easy to tell the hand from the foot when you can only just reach it. The distinguishing points are : (1) the level of the finger tips, including the thumb, is uneven, the level of the tips of the toes is level ; (2) the thumb can be made to fold across the palm of the hand, the great toe, although it moves more freely than the great toe of an adult, cannot be made to fold over the sole of the foot ; (3) the heel is a distinctive point.



FIG. 85.—Transverse III.

THE ELBOW FROM THE KNEE.—The point of the elbow is sharp, whereas the knee cap is broader. The best distinguishing point I have found to be the little lump of bone on the shin bone (known as the tubercle of the tibia) which you feel right at the top of the sharp edge of the shin bone, just below the centre of the knee joint. There is nothing resembling this tubercle in the elbow.

Treatment.—Keep the patient in bed and send for the doctor. He will either turn, that is put his hand into

the uterus, pull down a leg and so make the delivery a breech delivery ; or, if rupture of the uterus is threatening, he will have to pass a hook through the cervix over the child's neck, pull it down and cut off the child's head. He then delivers the trunk and limbs by pulling on the arm and finally delivers the severed head. This operation is known as Decapitation.

CHAPTER XX

BREECH DELIVERY—ASPHYXIA NEONATORUM

Complete and Incomplete Breech.—Breech is divided into complete and incomplete. In complete breech the lower limbs are extended along the child's body. In incomplete breech the thighs are bent up against the child's abdomen and the knees bent, or one or both feet present (footling).

Practically it matters very little whether a breech presentation is complete or incomplete.

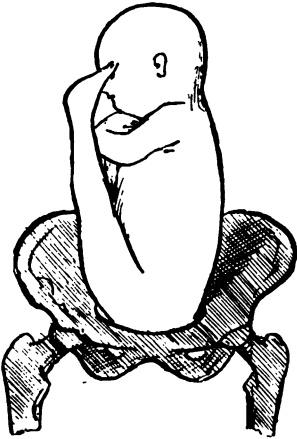


FIG. 86.—Complete breech.

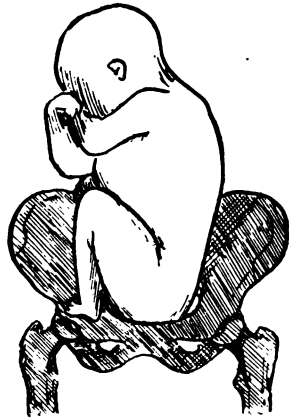


FIG. 87.—Incomplete breech.

Importance of Breech to a Midwife or Maternity Nurse.—Breech births can be attended by midwives, according to the Central Midwives Board.

I strongly advise you, however, always to send for a doctor, if you find a primipara with a breech presentation, or a multipara who has never had a full-term child without difficulty. Breech presentation in these cases is very probably due to contracted pelvis, and delivery may prove extremely difficult. But in other cases midwives are allowed to attend breech deliveries alone.

Maternity nurses, on the other hand, may sometimes have to conduct a breech delivery, because the doctor has not arrived.

It is important, then, for you to know all about breech.

Frequency.—In the 5,630 deliveries, breech, or footling, occurred 1 in 39.

Causes.—

1. Flattened or contracted pelvis.
2. Hydramnios.
3. One or both of twins.
4. Premature or dead children.
5. Uterine tumours.
6. Placenta Prævia.

These are conditions that are liable to cause breech presentations or cross-births.

7. The large head of the diseased fœtus, known as the hydrocephalic fœtus, does not fit into the brim and therefore breech presentation is favoured.

8. Often the cause cannot be discovered.

Danger of Breech Presentations.—The danger to the mother is not greater than that of normal vertex if the attendant is clean. Rapid delivery of the child may tear the perineum badly. Rapid delivery of the child is necessary, for the after-coming head squeezes the umbilical cord between itself and the bony rim of the pelvis. The placental circulation stops before the child's head is born, and the child able to breathe. Death of the child in this way constitutes the danger of breech deliveries. In midwives' practice one in every three to four babies so born are stillborn. If you learn the methods of delivery here described and practise them on the dummy and pelvis, you should not lose as many breech-born babies as one in four, unless you are

unfortunate enough to have a series of really difficult cases.

Course.—The breech does not fit the lower uterine segment so well as the head, hence the membranes protrude in a sausage-shaped bag and are apt to rupture early. The os then takes some time to dilate, for the breech does not press open the os as well as does the hard head. Neither breech nor head open the os as well as the membranes. If therefore the waters break early, you must expect the os to dilate slowly. The rest of the course of breech is so intimately connected with treatment, that the two will be described together.

Diagnosis.—The diagnosis of breech can frequently be made by abdominal palpation alone, by those practised in palpation. Dark green meconium coming away unmixed with liquor amnii after rupture of the membranes should make you suspect breech, though meconium comes away, too, when the head presents and the child is in distress. Meconium in breech presentations does not mean that the child is in any distress or danger. You hear the foetal heart beat more at the level of the umbilicus, that is higher than in vertex, in the first stage of breech deliveries.

Abdominal Palpation.—Before the rupture of the membranes, you must rely on abdominal palpation for the diagnosis of breech. The breech does not sink into the pelvis as does the head, and therefore before rupture you probably cannot feel it with two fingers in the vagina.

By the **FUNDAL PALPATION** you find the head and not the breech is at the fundus.

You distinguish the head from the breech by the fact that the head is separated from the back by a groove due to the neck. Again, if you take the head between your hands you will find you can move it freely between the pains. You can also move the breech in vertex cases from side to side, *but when you move the breech from side to side you move the whole back as well. The head, on the other hand, is an independent mass and moves on the neck.* Whilst ballotting the part of the foetus in the fundus with

one hand, feel the back with the other. You will be able to tell if the rocking movement is imparted to the back or not.

These are the two signs upon which you should rely most in diagnosing that the head, and not the breech, is in the fundus.

The head also feels hard, but in the absence of the other signs do not rely on this, for the breech may feel quite as hard as the head.

BY UMBILICAL PALPATION you make your fingers dip into the sulcus of the neck. You may feel the limbs on one side, the back on the other. They give you the clue to the position of the child, though from a practical point of view the position matters nothing.

BY PAWLIK'S GRIP you feel the resistant mass of the



FIG. 88.

Breech II, as felt by vaginal examination. no head sunk in the pelvic cavity. If there is a head in the cavity and you find another at the fundus, twins must be present.

The Necessity of a Vaginal Examination.—If you feel the child's head at the fundus and the back running straight down to the breech, which itself is over the pelvic rim, and are sure therefore of the diagnosis of breech, you need not make a vaginal examination before the waters break. It is not necessary for diagnostic purposes. Perhaps you will have to make one to be sure that the woman is in labour. You must always examine when the waters rupture for fear of prolapse of the cord.

breech over the brim and find it continuous with the child's back. You miss the bony prominence of the forehead of a vertex presentation.

BY PELVIC PALPATION you make sure that there is

Vaginal Examination.—You often cannot touch the presenting part in breech before rupture of the membranes. The cervix is empty. The membranes also bulge in a sausage-shaped mass.

You have, therefore, two of the cardinal signs that something is wrong, and unless you are sure that the case is one of breech presentation by your abdominal examination, it is your duty to report your doubts to a doctor.

When the breech has come within reach (usually after rupture of the membranes), you feel it, and you may mistake it for a head. The breech often feels very hard, and the groove between the buttocks, which are pressed together, resembles a suture.

But in a suture you can feel the ridge of an over-riding bone, leading to a fontanelle. Feel, in breech, for the knobs of the sacrum, and the coccyx of the child. Feel them in a new-born child until you are quite



FIG. 89.

Breech III, as felt by vaginal examination.

familiar with them. You will then have little difficulty in distinguishing them in a breech presentation, even though they are partly obscured by the swollen caput succedaneum that forms over the breech. Remember that in the canal one hip turns forward against the pubes, so that the width between the hips, which is about $3\frac{1}{4}$ inches, lies in the antero-posterior diameter. You will then feel the child's sacrum and coccyx on one or other side of the breech.

Occasionally a foot presents and you have to distinguish it from a hand, or a bent knee may be pushed into the os, and you have to distinguish it from a shoulder or elbow. On p. 197 I told you how to distinguish these presentations.

When the waters have broken you can put one finger-tip into the child's anus with all gentleness. The sphincter ani, the muscle that keeps the back passage closed, grips your finger tip in a characteristic manner. Try this on a new-born baby and you will see how the sphincter grips. You may also get dark green meconium on your finger. This feeling of the sphincter grip tells you the case is one of breech

Treatment.—Before the Waters Break.—Your great object is to prevent early rupture of the membranes. Therefore, if you make a vaginal examination, you should touch the membranes with the lightest possible touch, and never when they are tense at the height of a pain. You should keep the patient quietly in bed with the same object in view. The membranes will dilate the os better than anything else, and so the first stage of labour will be shortened if they are kept intact.

You make the same preparations as in the conduction of normal labour. You see that the woman's bladder and rectum are empty. You must be absolutely and scrupulously clean in all interference, and must cleanse the vulva thoroughly before interference. When the breech appears at the vulva you should get some woman to help you. Show her how to press on the fundus so that she will be able to do it, when you want it done later on.

When the Membranes have Ruptured.—The Rotunda rule is *to wait until the umbilicus of the child is born naturally*. If you pull on the child before this, the arms will become extended at the side of the head. Head and arms cannot pass the brim at the same time, and so the child becomes jammed, and all your pulling will not deliver it. The child will of course die. Only with premature children is it a good thing to pull on the child before the umbilicus is born. In these small children the os opens sufficiently to allow the body to pass, and is then apt to close down quickly over the child's neck and prevent the delivery of the head. Extension of the arms by the side of the head prevents this catching of the os round the neck. Only experience will teach you, by noting the size of the breech or foot that

has passed the vulva, whether the premature child is small enough to allow you to do this with safety.

Position.—When the breech, or in the case of a footling (the technical term for a foot presentation) the upper part of the thigh, has appeared at the vulva, get the woman quickly into the cross-bed position. Figure 55, p. 115, shows you this cross-bed position in which the woman lies on her back across the bed with her buttocks well to the edge of the bed. Her thighs are flexed on her body and her legs on her thighs.

A mackintosh passes from under her into the bath. You have cleaned the vulva and passed a catheter. You sit on a chair facing the patient's buttocks. She puts a foot on each of your knees and separates her knees. Your hands are sterile. Boiled rubber gloves are most useful. Have some clean soap near at hand with which to lubricate your hands or gloves. Soap is made by boiling and is therefore free from microbes. The outer surface, however, gathers microbes from dust and dirt. Wash off the outer surface and you can then safely use the soap to lubricate your hands or gloves.

These preparations only take a few moments, if the vulva and your hands are already clean and you have explained to the woman the position you will want her in. You can have her lying across the bed earlier, if you like.

When the Child is Born to the Umbilicus.—*Now comes the important time.* The head is in the brim and either the uterus alone, or the uterus with your help, has to deliver the child before pressure on the cord endangers or destroys its life.

The room must be warm with a fire. Cold air blowing on the breech may make the child attempt to breathe before it is born. If it does so, it sucks mucus and liquor amnii down its throat, and may be suffocated. If the air is warm, there is no necessity to wrap the breech in a warmed flannel.

When the umbilicus is born, pull down a loop of the cord. If the cord is pulsating well, the child is getting blood and oxygen from the mother. You can wait for

the next pain to deliver the child, getting the woman who is helping you to press on the fundus when the child's body begins to advance again with a pain.

If the cord is not pulsating, or is pulsating feebly, the child's life is in danger. If the circulation through the cord stops for four minutes, the child will certainly die.

You must deliver the child with speed. The child's life depends on the speed and skill with which you deliver. The first thing is to bring down the arms.

How to Bring Down the Arms.—In the breech delivery at this

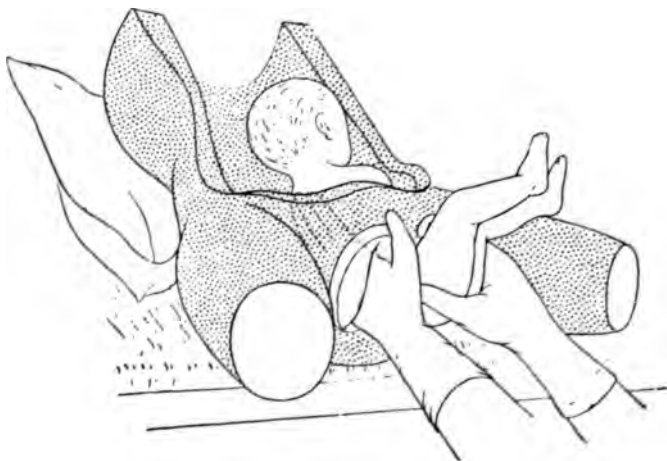


FIG. 90.—Bringing down the posterior arm.

stage the child's back is directed to one side of the pelvic cavity, its abdomen to the other.

You bring down the posterior arm first.

To do so catch the child round the hips with one hand and lift the child's pelvis up towards the mother's abdomen. Pass the whole of your other hand lubricated with soap up along the child's back into the vagina. Pass as many fingers as you can over the child's posterior shoulder down the arm and sweep the arm over the child's face and chest and out of the vulva. With many fingers the pressure on the child's arm is evenly spread, and it is very unlikely that

you will break the arm. The ease with which you do this depends on whether the arm is extended or not. If it is extended, you follow the same tactics. If you fail, you will have to send for a doctor.

TO GET DOWN THE ANTERIOR ARM.—Catch the child round the hips with the hand you had passed into the vagina and pull its body back against the perineum. This will give you room to pass three or four fingers of the other hand between the child and the pubes. Pass them over the anterior shoulder and bring down the anterior arm.

If you fail you must make the anterior arm posterior, and then you will have room in the hollow of the sacrum to pass in your whole hand. You have to twist the child. Pull the arm that is born across the child's chest and so twist the child a half circle. This is the right way to twist it. Rarely you will fail. If you do so, twist the other way.

The undelivered arm is now posterior and you have just learnt how to deliver a posterior arm.

Arm Behind the Head.—Sometimes an arm lies in the groove of the neck behind the head. You feel it there with your whole hand. Note which way the fingers point and twist the child in the other direction. This may free the arm so that you can get it down. If you can't, send for a doctor.

Delivery of the Head.—The child is still in danger, speed still essential, but do not get flurried. You will be useless, if you get flurried.

The child's head commonly lies with its face to the mother's sacrum. Sometimes the face is turned to the side, rarely to the front against the pelvis. In any case pass your half hand (the hand without the thumb) into the vagina and put two fingers into the child's mouth, with the fingers well to the back of the tongue. Put the fingers of your other hand on either side of the child's neck over the shoulders. Fig. 91 p. 208 shows the position with the child's body resting on the forearm.

Pull the child's head down in this way and as it begins to pass the vulva lift the child's body right up to the

mother's abdomen. This jams the occiput against the pubes and the face sweeps over the perineum.

Get your helper to press on the fundus at the same time.

In the rare cases in which the face is forwards, (1) either the face turns back to the sacrum in its descent, or (2) you have to pull the child down with the face against the pubes. To do this you must not lift the child's body up to the



FIG. 91.—Delivery of the head with two fingers in the mouth.

mother's abdomen, but rather press the occiput against the perineum.

Prague Method.—The above is the best method of delivery. you fail, you can try the Prague method.

The illustration shows you the Prague method. With one hand you take the child's ankles, the fingers of the other hand are put over the child's shoulders. You pull the child down in this way, until the occiput is against the pubes or

until the head begins to dilate the vulva. Then you lift the child's shoulders, by the fingers over the shoulders, up towards the mother's abdomen and pull with your other hand. This keeps the head flexed, the face sweeps over the perineum and the child is born. The child's neck

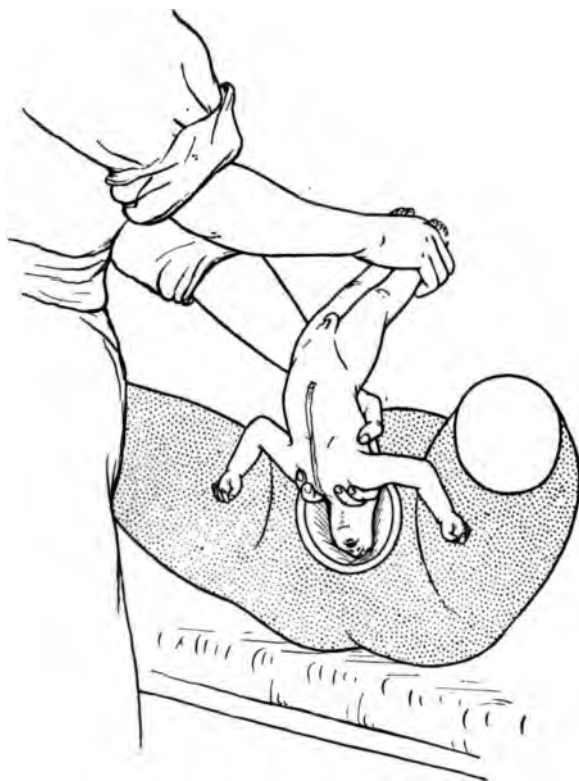


FIG. 92.—Prague method of delivering the after-coming head.

has at times been broken by this method, but for all that you must not be frightened to pull. If you fail by these two methods, you must send for a doctor, but you will very rarely, if ever, fail to deliver, although you may fail to deliver a live child.

Impacted Breech.—By impacted breech is meant a complete breech presentation, which enters the pelvic brim and jams in the pelvic cavity.

You get the signs of obstructed labour. A large caput forms. The breech does not advance with the pains, nor can you push it back between the pains. You tell this by pressing on the breech with your fingers both between and during the pains. The foetal heart between the pains falls below 120 or rises above 160. The mother's pulse and temperature begin to rise.

Treatment.—You must, of course, as in all cases of obstructed labour, send for the doctor.

He will probably pass a hook, or a piece of gauze known as a fillet, over one groin of the child and deliver the child by pulling on the hook or fillet.

Recapitulation.—A breech is usually delivered naturally and easily in a multipara who has had a baby previously without difficulty. In the majority of cases, therefore, you will not have to help. When you do have to help you must help promptly. You must always clean your patient, and put her in the cross-bed position and yourself be clean when a breech is to be delivered.

Wait till the umbilicus is born.

Pull down a loop of the cord. If the cord is pulsating well, wait.

If not, deliver the arms. Deliver the head with two fingers of one hand in the mouth, the fingers of your other hand over the baby's shoulders, and your assistant's pressure on the fundus.

If you fail, try the Prague method.

If both fail, and in cases of impacted breech, send for a doctor.

ASPHYXIA NEONATORUM

Rules 13 and 15 of the Central Midwives Board.—"In the case of a child being born apparently dead, the midwife should carry out the methods of resuscitation which have been taught her."

“On the birth of a child which is in danger of death, the midwife shall inform one of the parents of the child’s condition.”

Meaning of Terms.—Asphyxia is from the Greek—*a*, negative, and *sphysis*, a pulse—no pulse. Neonatorum is from the Greek—*neos*, new, and the Latin—*natus*, born.

As a matter of fact asphyxia, though meaning no pulse, has come to mean no breath, and is used in the sense of no breath by medical science.

Blue and White Asphyxia.—Asphyxia neonatorum is divided for practical purposes into blue and white. In blue the child’s face is purplish like the face of a man being choked. In white the child’s face is white like the face of one dead. In the first the child is being choked, in the second the child is either dead or on the very brink of death. The first is practically always recoverable, the second, sometimes recoverable. As blue and white asphyxia are grades of danger to the vital function of breathing, you can understand that a child can be between blue and white asphyxia, that is, pale, but not deadly white.

Why Asphyxia Neonatorum is dealt with after description of Breech Deliveries.—You will most likely have to treat breech-born babies for asphyxia. You have to hurry the delivery of the baby to prevent it being choked or suffocated. When it is born you may often have to restore it.

After other deliveries you will sometimes have asphyxiated babies to restore, but not so often as after breech deliveries.

Preparations.—On p. 111, under the conduction of normal labour, you were advised to have linen rags for wiping out the baby’s mouth, and hot water and a small tin bath in case of white asphyxia. These preparations are absolutely essential in cases of breech or difficult deliveries.

Blue Asphyxia.—In this form the baby’s face is purple, its body is firm and rigid. The cord pulsates strongly.

Treatment.—Never encourage the baby to breathe before you have cleared its throat of mucus and liquor amnii. Its first breath will be inspiratory, and if it sucks mucus into its lungs, it will pass into the more severe condition of white asphyxia. Neither should you cut the cord when it is

beating strongly, for the baby is getting oxygen from the placental circulation.

First wipe the mucus out of the throat with a linen strip on your little finger. Wipe well over the back of the tongue, using fresh strips of linen each time.

Another excellent way is to suck the mucus out of the child's throat with a catheter, provided you pass the catheter point well over the back of the child's tongue. Dr. Carton, late Assistant Master, has devised a useful catheter for this purpose, which prevents you sucking the mucus into your own mouth. Insert, suck, withdraw, blow out the mucus into a rag, insert again, suck, withdraw, and so on until you can suck out no more.

Another thing you must practise is holding a baby with one hand upside down by its ankles. This allows all the mucus to run out of its throat, and you can use the catheter, or linen rag, with the other hand. It is also an excellent position for the first inspiratory breath of the child, for it cannot suck mucus into its windpipe.

When you have cleared the throat you can make the baby breathe and cry by smacking it or sprinkling a little cold water over it.

White Asphyxia.—In this variety, the child when born is of a deathly pallor, the limbs and body are flabby and the cord has either stopped pulsating or the pulsation is very slow, probably under 40 per minute instead of 100 or more.

Treatment.—Take off your gloves if you have them on. Tie one ligature only round the cord for speed. Cut the cord. Hold the baby upside down by its ankles and suck or wipe out the mucus. Put the baby in a hot bath, as hot as can be comfortably borne by the hand. Hold the baby's head out of the bath with one hand and splash the hot water over the body with the other.

Push the fingers of your hand under the baby's ribs a little to the left of the middle line, until they push against the heart. You will tell in this way if the heart has stopped beating. Practise the method on healthy new-born babies to become familiar with it.

If the heart has stopped, the child is dead, but be sure it

has stopped before you abandon treatment. If it has not stopped, again clear the throat of mucus. Dry the child quickly on a warm towel that has been held to the fire by an assistant. Then perform Sylvester's artificial respiration six to eight times.

Again put the child in the bath. Rapidly clear the throat, feel for the heart, dry, and repeat Sylvester's method.

Go on with this round of treatment as long as the heart beats. Perhaps you will have to go on for an hour.

If the child's skin gets pink, try the effect of a sprinkling of cold water and rubbing a little whisky on its gums and body. If it gasps, continue Sylvester's method, with the hot baths and sprinklings of cold water until the baby cries or breathes regularly.

Watch these children carefully by the fire until the child cries properly. If breathing is feeble, whilst the child is



FIG. 93.—Sylvester's artificial respiration. Inspiration.

on your lap by the fire, you should occasionally do Marshall Hall's method of artificial respiration.

I advise you always to send for a doctor, if the baby does not quickly respond to your efforts.

If, by unfortunate concurrence, the mother should begin to bleed or otherwise be ill, attend to her, for her life is more valuable than the baby's.

How to do Sylvester's Artificial Respiration.—Lay the baby on a flat surface such as a table, with a folded towel under its shoulders to raise its chest.

Get your assistant to hold it steady by the ankles. You cannot do Sylvester's method without this assistance, for the baby slips.

With each hand take the baby's wrists. Raise the child's arms above its head and pull on them. You pull the child's chest up and out, as it were, by this movement. This is the inspiratory movement. Bring the child's arms down over its chest and press the sides and front of the chest with your hands. This empties the chest. It is the movement of expiration. Do this eight times in the half-minute ; thus—raise the arms and keep them raised whilst you count two, bring them down and compress the chest whilst you count two. Practise on a healthy new-born baby.

How to do Marshall Hall's Artificial Respiration.—Lay the child on its side across your knees. Take hold of the upper arm. Pull this arm up as you did the two arms in Sylvester, and at the same time roll the child on to its back. This is the inspiratory movement. Fold the arm over the chest, roll the child on to its face and compress its ribs with your hand. This is the expiratory movement. Do these movements at the same speed as you did Sylvester's movements. It has the advantage over Sylvester's method that you can do it single-handed.

Practise this method, too, on a healthy, new-born child.

CHAPTER XXI

ABNORMAL LABOUR

TWINS—HYDROCEPHALUS—ANENCEPHALUS — MALFORMATIONS—MONSTERS—IMPACTED SHOULDERS—PROLAPSE OF A LIMB WITH THE HEAD—PROLAPSE OF THE CORD

TWINS

Frequency.—In the 5,630 deliveries twin birth occurred 1 in 79. Triplets are extremely rare.

Cause.—Twins are due : 1, to the splitting in two of the fertilized ovum ; 2, to the continued existence in the womb of two fertilized ova. In the first case the twins are alike and of the same sex. In the second they may be of different sex. In the first case there is but one placenta, but two amniotic sacs. In the second there are two placentæ and two amniotic sacs.

Course and Results.—Twins present in the following ways arranged in order of frequency : 1, both heads ; 2, one head, one breech ; 3, both breech ; 4, one head, one transverse ; 5, one breech, one transverse ; 6, both transverses.

Twins are usually born without difficulty. This is a good thing, for I do not expect you will often diagnose twins before the first child is born. Owing to the stretching of the uterus, twins are frequently born prematurely. They, not being full time, are apt to die soon after birth. The stretched uterus in cases of twins is said to bleed more than normally, so be ready for postpartum hæmor-

rhage. Malpresentation of the second child is not uncommon. The common order for the birth of twins is : 1, the first child ; 2, the second child ; 3, the common placenta or the placenta of the first child ; 4, the placenta of the second child.

Diagnosis.—As I say, you will probably not diagnose twins until the first child is born. Then, when you lay your hand on the uterus you find the fundus is still well above the umbilicus, and on palpating you find another baby.

The large size of the uterus, before the birth of the first child, may make you suspect twins.

Abdominal Palpation.—The most reliable sign of abdominal palpation is the finding of three large foetal parts. You may find more than these. You may find four large parts, or over four limbs.

Foetal Hearts.—There will be two foetal hearts. You cannot, however, distinguish them by counting first one heart and then the other, for the rate of a foetal heart is constantly varying.

You should listen for the foetal heart. Put an ink mark on the spot where you hear it loudest. Then listen over the rest of the uterus. If you come across another spot of loud foetal heart sounds, put an ink mark over it. Now join the two lines. The sound, which is intense at one of the spots, will gradually decrease as you move your ear from this spot to the centre of the line. As you move your ear nearer and nearer to the other ink mark, the sound gets louder and louder, until you reach the other intense spot. This is the best way of diagnosing two foetal hearts.

Vaginal Examination.—By vaginal examination you diagnose the presentation of the first child.

Treatment.—Let the first child be born naturally according to the rules of normal labour.

Then palpate the abdomen to discover the lie of the second child. If you are not sure, make a vaginal examination to discover the presentation. If the presentation is vertex, face, brow or breech, let the case alone. The child small, and the parts already dilated by the first child, so

that even a brow will probably be delivered without difficulty. If the lie is transverse, send for a doctor.

Probably the second sac of membranes will rupture within half an hour of the birth of the first child. If not, rupture them after half an hour has elapsed, scratching through them with the boiled stylet of a catheter or a boiled hairpin. If the second child does not descend quickly, press on the fundus with the pains.

Remember always to divide the cord between two



FIG. 94.—Locked twins.

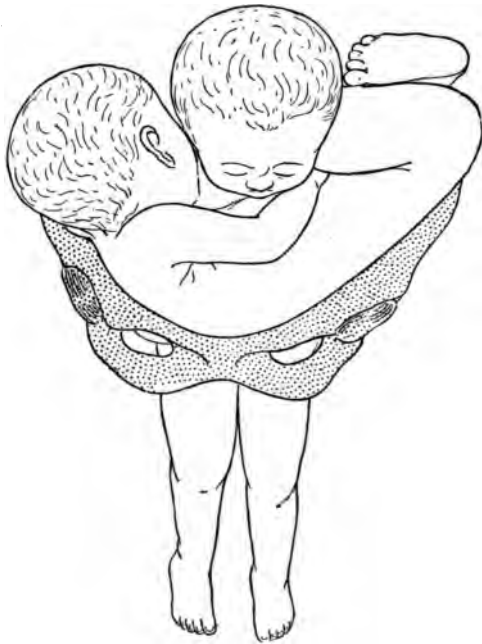


FIG. 95.—Locked twins.

ligatures in all cases. You are apt not to make the diagnosis of twins. The circulation of the blood in the two cords may communicate in a common placenta, and, unless the placental end of the umbilical cord is also tied in a case of twins with common placenta, the second child will bleed to death.

Locked Twins.—In very rare cases the twins so interfere with each other that neither can be born. They are said to be locked. The figures show two of the ways in which twins lock. The results are : 1, no presenting part comes into the brim ; 2, one head comes down and jams ; 3, one child is partly born by breech, but the head cannot be delivered.

Treatment.—In the first case you get the three cardinal signs before rupture of the membranes ; after rupture you get no presenting part and signs of obstructed labour. The other two cases also give you signs of obstructed labour. So you see, even if you fail to diagnose the condition, you will know when to send for the doctor, which, after all, is the important point.

HYDROCEPHALUS

Meaning of the Term.—Hydrocephalus comes from two



FIG. 96.—Hydrocephalic monster.

Greek words—*hudor*, water ; and *kephalee*, the head. It is a disease in which the head is greatly distended by an excessive amount of water distending the brain.

Frequency.—In 5,630 deliveries, it occurred 1 in 938.

Results.—The sutures and fontanelles are very wide. The bones of the head are very thin.

The large head does not fit the brim. The child consequently not infrequently presents with the breech, in which case the after-coming head is drawn out like a sausage, but is delivered without much trouble.

Diagnosis and Treatment.—You probably will not diagnose it. If the breech presents, it does not matter. If the head presents, it will not fix, and you will not be able to reach it. You get the three cardinal signs before rupture of the membranes; no descent and obstructed labour after rupture. In such cases you send for the doctor.

If you do reach the head, you find wide fontanelles and wide sutures with slow progress. Summon a doctor in such a case.

The doctor will either turn the child, or will have to perforate the head and break up the skull.

ANENCEPHALUS

Meaning of the Term.—Anencephalus is derived from two Greek words—*an*, negative; *enkephalos*, brain. The child is without a vault to its skull and without a brain. A very horrible-looking deformity results.

Frequency.—In the 5,630 deliveries, it occurred 1 in 625.

Result and Treatment.—No difficulty of delivery, as a rule, occurs. The feeling of the vaultless head, when you make a vaginal examination, will be very puzzling.



FIG. 97.—Anencephalic monster.

Probably the presenting part will advance well with the pains, but if you are puzzled and uneasy about the case, by all means inform a medical man. The malformation, in fact, all malformations, are so rare that you will not often have to send to a doctor on account of them.

MALFORMED CHILDREN AND MONSTERS

Other malformations occur, some of which may hinder delivery. Monsters are usually small and born naturally. If delivery is interfered with, your three cardinal signs or signs of obstructed difficult delivery will prevent you from allowing labour to go on without a medical man.

IMPACTED SHOULDERS

After the head has been born the shoulders, in rare cases, may jam. This is especially the case if you pull on the head, when it is born, and twist it the wrong way, mistaking, say, a Vertex II for a Vertex I.

Treatment.—Put your half-hand, without the thumb, into the vagina posteriorly and pull down the posterior arm over the child's chest. Try to get down the anterior arm as an anterior arm. If you fail, pull the delivered arm over the child's chest and twist the child a half-circle into the direction to which this arm points, exactly as you do in breech. Bring down the second arm, using four fingers as you did the posterior arm. If you fail, send for a doctor.

He may have to cut through the child's collar bones with scissors, an operation known as cleidotomy, before he can deliver. The child will certainly be dead.

PROLAPSE OF A LIMB WITH THE HEAD

You may feel a hand or foot by the side of the presenting head.

Send for a doctor in all such cases, except head and hand in the second child of twins, for in this case, delivery will probably be easy.

PROLAPSE OF THE CORD

Definition of Terms.—Prolapse means a falling in front of or down (*prolabor*—Latin, a falling forwards or downwards).

Before the membranes have ruptured, you may feel the umbilical cord in front of the presenting part. It is then said to be presenting. Prolapse occurs when the waters break. There is no need for it to be preceded by presentation. The cord comes down and you can feel it in the vagina, an accident which immediately makes the labour abnormal.

Frequency.—In the 5,630 deliveries, it occurred 1 in 208.

Causes.—Prolapse of the cord is impossible, if the lower uterine segment firmly fixes the presenting head between the pains. There is no room for the cord to come down.

But when the presenting part is not fixed, the bag of membranes protrude like a sausage, the after-waters and fore-waters communicate, and when the membranes break the cord may be swept down in the rush of waters.

There is no necessity to repeat again the causes of this protrusion of the membranes, one of the three cardinal signs of abnormal presentations.

Danger.—A prolapsed cord in itself does not add to the risk of the mother, but about half the children are stillborn. If it prolapses in a breech, the pressure of the breech on it whilst the os is dilating will usually kill the child.

Diagnosis.—You feel the cord. You cannot well mistake it for anything else.

Unless the head is well fixed, you should always make a vaginal examination after rupture of the membranes to see if the cord is prolapsed. Feel, too, if the cord is pulsating.

Treatment.—If you feel the cord presenting, inform a medical man.

If the cord prolapses, feel if it pulsates. If it has stopped pulsating definitely, the child is dead, and you need not send for a doctor if labour is progressing naturally. If it is pulsating, send at once.

In the meantime you can take away the pressure of the presenting part from the cord by means of two postures : 1, the knee elbow ; 2, the Trendelenburg.

THE KNEE-ELBOW position, which you see in the figure,



FIG. 98.—Knee-elbow position.

is the best, for the fundus of the uterus is directed downwards and the child by gravity falls away from the os and pelvic brim. It is, unfortunately, a very tiring position, and cannot be maintained for very long.

THE TRENDLENBURG POSITION is not so good, but is not



FIG. 99.—Trendelenburg position.

so tiring. You can arrange it with a padded chair, as you see in the diagram ; or you can bring about much the same result by tilting the end of the bed high up on a strong table of the height of a kitchen table.

What the doctor does.—He will probably either replace the cord with his hand or with the help of a catheter (he passes a loop of silk through the catheter, a loop of cord into the loop of silk and pushes the catheter up to the fundus), or he will deliver the child quickly, if the os is wide enough, by forceps or turning.

CHAPTER XXII

ABNORMAL LABOUR

ABNORMALITIES CONNECTED WITH THE UTERUS AND BONY PELVIS—DEFINITION OF OBSTETRICAL OPERA- TIONS—FORCEPS—WALCHER'S POSITION

PRIMARY UTERINE INERTIA

SOME uteri do not always do their duty in opening the os and pushing out the child. They are feeble uteri. In Chapter XVIII we discussed exhausted uterus, also secondary uterine inertia. But the condition with which we are now dealing is different. The uterus is feeble from the start, the pains are never good strong pains, but feeble nagging pains.

The only way in which primary and secondary inertia are connected, is that, as you would expect, a feeble uterus will get exhausted sooner than a strong one. Feeble pains persist for a few hours and then cease. They often seem "frightened away" by your arrival.

With a feeble uterus, the woman does not get a rise of temperature and pulse, or other signs of obstructed labour.

Cause.—There seems to be no particular cause. Primary inertia is commoner in primiparæ than multiparæ. A full bladder or full rectum will lessen the strength and frequency of the pains. Feeble pains often follow early rupture of the membranes.

Course.—Labour is very tedious, but there is no particular danger to the mother or child. The mother gets weary of the delay, which may run into three or more days, the

pains coming on for a few hours and then passing away, but she is not physically exhausted.

Treatment.—*Before rupture of the membranes*, keep the bowels open and exercise patience. No other treatment is required. *After rupture of the membranes*, watch how the second stage progresses. If after two hours the presenting part advances so slowly that you think it will not be born within another hour, inform a doctor. He will probably deliver the child by forceps.

In the third stage, although contraction may still be feeble, retraction is good. Consequently, there is no special liability to postpartum hæmorrhage. This constitutes the great practical difference between a feeble and an exhausted uterus.

SLOWLY DILATING OS

The os may take days to dilate : 1, with premature rupture of the membranes ; 2, if the cervix has a big scar, due to some operation ; 3, rarely for some congenital rigidity, that is, some inherent peculiarity of the structure of the cervix. Primary uterine inertia is often associated with slowly dilating os.

Course.—These cases result in tedious labour. Several days may elapse and yet the os scarcely gets any bigger.

Treatment.—If the membranes have been ruptured for two hours with good pains, or four hours with feeble pains, or if the mother or child show any signs of distress, write a note to a medical man.

He will either give drugs or dilate the os, but treatment depends very much on the conditions found.

PRECIPITATE LABOUR

Sometimes the pains are scarcely felt until the os is opened. Strong pains then deliver the child in a few minutes, or even without warning to the mother.

Dangers.—The dangers are chiefly to the child. The mother may be standing up at the time and the child fall out and break its head on the floor or snap its cord and

bleed to death. She may be at the closet owing to feeling bearing-down pains like those felt in the back passage, and the child be drowned.

The mother may get a badly torn perineum. She may also have to endure the awkwardness of having a baby in the street.

Treatment.—Delivery is over before you can treat the patient. With a history of previous precipitate labour keep the patient in bed during the first stage.

QUIET RUPTURE OF THE UTERUS

This is a form of rupture which occurs without previous signs of threatening rupture. It is not uncommon in Ireland.



FIG. 100.—Pendulous abdomen leading to quiet rupture of the uterus.

Causes. — The causes are not really known. One cause is pendulous abdomen. As you see in figure 100, p. 226, the head, instead of being pushed down into the pelvic canal, is pushed against the sacral promontory. The uterine and vaginal walls between the head and the promontory get nipped, rubbed and bruised, and may give way.

Diagnosis.—Shock may overcome the patient immediately, and the presenting part recede.

Sometimes, however, the child is born and collapse comes on in the third stage, or the placenta is not expelled.

Sometimes with a small tear, it may not be discovered until, during the lying-in, the woman gets ill with fever or foul lochia, and the doctor who examines her finds the tear.

Treatment.—In all those circumstances you would send for a medical man, whether you had diagnosed the rupture

or not. His treatment depends largely on the conditions found.

CONTRACTED PELVIS—PELVIC TUMOURS

Meaning of the Terms.—Contracted pelvis means that the pelvic bones are deformed either due to disease or poor development. The canal to which they form the walls is consequently made smaller than normal, or irregular. The passage of the child is, of course, more difficult than normal.

I include pelvic tumours (*tumor*—Latin, a swelling) because the result they have on labour (without skilled medical assistance) is the same as a narrowing of the passage, that is, they make the passage of the child difficult or impossible.

A tumour is a lump, due to disease. It may grow from the pelvic bones or from any of the soft tissues that are located in the pelvic cavity.

Diagnosis of Pelvic Tumours.—I deal with pelvic tumours first, because they can be dismissed in a few words.

By abdominal palpation you find a malpresentation, or that the head does not fit into the brim, or if it fits, labour does not advance.

By vaginal examination you feel the tumour below obstructing the passage of the presenting part.

Frequency.—Pelvic tumours obstructing labour are so uncommon that many of you will not come across a case.

Treatment.—Send for a medical man. His treatment depends entirely on the nature and position of the tumour.

Common Forms of Contracted Pelvis.—The commoner forms are: 1, flattened pelvis, which, you remember, was a cause of face and brow presentations; and 2, generally contracted pelvis or a pelvis in which all the bones are smaller than normal.

Results.—In discussing abnormal presentations you will remember that contracted pelvis was always amongst the list of causes. The ordinary dimensions of the pelvic inlet are, as you remember, 4 ins. from front to back, 5 ins.

obliquely, and 5 ins. from side to side. Now the inlet being the entrance to the canal is the important part in contracted pelvis, because if the door, so to speak, is too narrow to allow one to pass, it does not matter very much if the passage beyond is narrow too.

Results in Slight Flattened Pelvis.—In a flattened pelvis the



FIG. 101.—Flattened pelvis. Compare with fig. 12, p. 38.

inlet from front to back may be $3\frac{1}{2}$ ins., the oblique 4 ins., and the transverse $5\frac{1}{2}$ ins. In such a case the head instead of entering the pelvic inlet obliquely, as it normally does, enters transversely. The head is also tilted a little, for the width of a tilted head is $\frac{1}{2}$ in. less than the width of a non-tilted head. The result, then, is that the sagittal suture runs transversely and is tilted up so as to be nearer the sacral promontory. This tilting is known as Naegele's obliquity, and if you get skilled at vaginal examination, you may one day detect it. If you do, you will know there is slight flattening of the inlet, which will make labour difficult, and you will send for a doctor.

General Results.—Contraction both in the flattened,

generally contracted, and other rare forms of contracted pelvises, may be much greater than this. The measurements of the brim may be less than 2 ins. from before backwards and less than 3 ins. transversely. In such a case delivery of a full-term child through the canal is impossible.

Is it Possible to Detect a Contracted Pelvis in a Primipara or Multipara before Labour?—Yes, it is possible.

In a multipara, you can very easily find out. Ask her if she has had a live full-term child. If she has, then the child was able to pass through the passage and live, so the passage cannot be particularly small.

In a primipara, see if she is deformed in any way, if she is a dwarf or a hunchback, if she walks with a limp, if she has a pendulous abdomen. In any of these cases she is likely to have a contracted pelvis. Do not attend such a patient without a doctor; indeed, as the first baby is really the test of a woman's labour capacities, I would advise you never to attend a primipara alone. You will then avoid the responsibility of the majority of grave and difficult cases of labour.

How to Detect Contracted Pelvis when Labour has Begun.—You have the signs I have so constantly repeated to you before rupture, the three cardinal signs: 1, ballotting or absence of the presenting part; 2, you cannot reach the presenting part with your fingers; 3, sausage-shaped bag of membranes. Malpresentations are common.

After rupture you either cannot reach the presenting part, or it does not advance with the pains. You will get signs of obstructed labour, and if the contraction is at all marked you will eventually get rupture of the uterus with death, probably, of mother and child, unless you send for help.

How to Measure the Diagonal Conjugate.—The diagonal conjugate is the distance from under the pubic arch to the sacral promontory. When you make a vaginal examination your fingers press under the pubic arch. Press your fingers up to the sacral promontory. You can tell it because, just above the promontory, the spine shelves back, as you see in figure 102, p. 230. If you can reach it at all, the pelvis is

probably flattened. If you reach it, put the tip of your middle finger on to it. Mark your index finger where it passes under the pubic arch with the nail of the index finger of your other hand. Measure the distance from your nail-mark to the tip of your middle finger along the backs

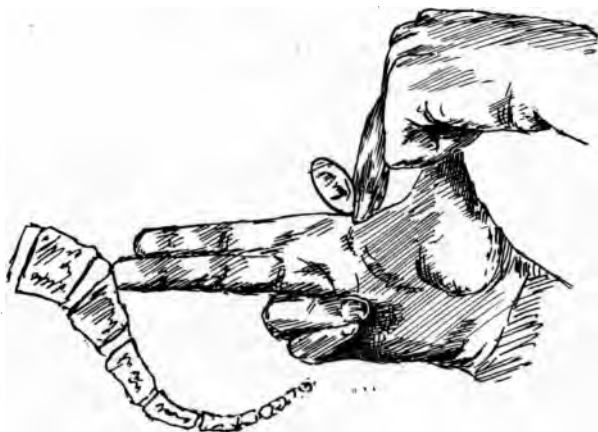


FIG. 102.—Measuring the diagonal conjugate.

of the fingers. This is the diagonal conjugate. By subtracting $\frac{3}{4}$ in. you get the antero-posterior diameter of the brim (the true conjugate). The measurement is not particularly accurate, nor is it of much use to you, but you ought to know how to take it, because it is a time-honoured method.

Remember, however, that normally you should not be able to reach the sacral promontory in this way.

Treatment.—**Obstetric Operations.**—**Walcher's Position.**—You must, of course, send for medical assistance. The doctor may wait until the os is more widely dilated. If it is sufficiently dilated, in cases in which contraction is not very great, he will put **FORCEPS** on to the child's head and deliver by pulling; or, in other cases, he will **TURN**, that is, put his hand into the uterus, pull down a leg and deliver as a breech.

If the child is dead, he will probably **PERFORATE** the head, if the head presents. To do this he makes a hole in the child's skull, washes out the brain, crushes up the skull with strong instruments, and pulls out the child. If the body causes him difficulty, he may cut it up with strong scissors, **EMBRYOTOMY** (*embryon*—Greek, foetus; *tome*—Greek, cutting up).

In delivery of a breech presentation he may have to perforate and crush the after-coming head before he can deliver it through the narrowed passage.

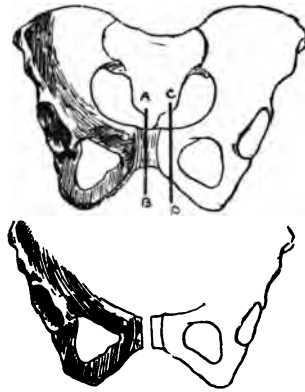
If the child is a cross-birth, he may **DECAPITATE** it.

Sometimes to get a live child a doctor will make the pelvis widen out by cutting through between the pubic bones, known as the symphysis pubis, or cutting through one pubic bone, operations known as **SYM-physiotomy** and **PUBIOTOMY**.

In extreme cases of contracted pelvis, the doctor will have to open the abdomen, cut into the body cavity, cut open the uterus and so deliver the child and afterbirth, an operation known as **CAESAREAN SECTION**.

You can see then that contracted pelvis is a very serious thing. Many doctors when they find contracted pelvis during pregnancy, bring on labour by introducing a solid catheter known as a bougie into the uterus, or by other means, in the seventh or eighth month of pregnancy, when the child is premature and therefore small, but at the same time, with care, can be reared. This is known as **INDUCTION OF LABOUR**.

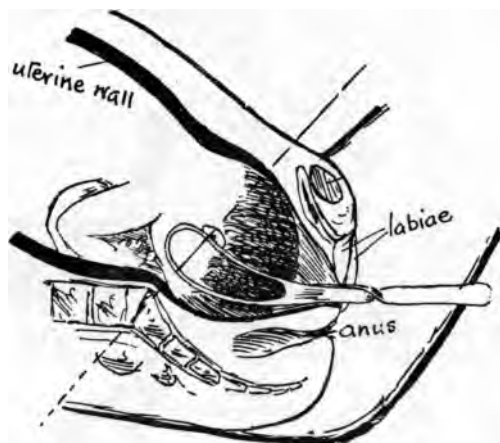
Forceps.—Forceps are so frequently used in practice



A B shows line of cut in Symphysiotomy.
C D " " Pubiotomy.

FIG. 103.—Diagram to explain Symphysiotomy and Pubiotomy.

that you should know a little about them. Forceps are instruments composed of two separate blades or handles, which are so shaped that they can be passed into the vagina on either side of the head and made to catch the head between them. The handles of the blades are locked, and the head is firmly grasped. By pulling on the handles, the child's head is delivered and the trunk and limbs follow.



Line drawn across pelvis at junction of upper and lower Uterine Segments.

Fig. 104.—Diagram to show forceps applied to the foetal head.

When Forceps are Put on.—Forceps are frequently used in practice to deliver a child whose head has entered the brim, but though the os is dilated and the membranes ruptured, progress is slow, and the mother is beginning to be exhausted. They are also put on if there is any sign of danger to the child. Some doctors deliver the after-coming head of a breech with forceps. There is very little danger in the application of forceps if scrupulous cleanliness is maintained.

Duties of a Nurse when Forceps are Applied.—Of course you must follow very largely the instructions of the doctor.

He will have preference for some particular lotion, position and method of management.

Outside these modifications the general duties to which you should attend are as follows :

The rectum and bladder of the patient should be empty.

The vulva and neighbourhood must be thoroughly cleaned.

You must have, if you can, four clean basins, two clean jugs of cold water, and two kettles on the fire.

The rest of the preparations of the patient are much the same as for a vaginal douche.



FIG. 105.—Walcher's position.

You must also have at hand a small bath, etc., in case the baby is in white asphyxia.

The position of the patient is nearly always on the left side. Sometimes, when the patient is under chloroform, the doctor may turn her on her back into the cross-bed position.

There is one other position you should know. It is known as WALCHER'S POSITION, and the advantage of it is that it increases the distance between the pubic bone and the sacral promontory in cases of flattened pelvis, and so enables the foetal head to pass the inlet with less difficulty.

In Walcher's position, the woman lies on her back with her lower limbs hanging over the edge of the bed without her feet touching the floor. The bed often has to be propped

up to prevent her feet touching the floor. It is a painful position, but is very useful when the patient is under chloroform.

Finally, whenever you are making preparations for the doctor, make them as quietly and as unostentatiously as possible, for the patient is probably very nervous and frightened about herself.

CHAPTER XXIII

ABNORMAL LABOUR

ABNORMALITIES OF THE THIRD STAGE RETAINED OR ADHERENT AFTERBIRTH

THE rules for retained or adherent afterbirth were given on p. 124. Sometimes the placenta is retained by the lower part of the uterus being so tightly contracted that there is no lower uterine passage through which the upper part of the uterus can push the placenta. *This tonic, or hour-glass contraction of the lower uterine segment is nearly always due to unnecessary massage, rubbing, and prodding of the uterus, so if you conduct the third stage properly you will seldom meet with it.*

Adherent Afterbirth is more troublesome. Owing to some disease of the uterus, the placenta and membranes do not separate naturally from the uterine wall, but are bound to it by adhesions. In either case bleeding may occur. If it occurs, the case becomes one of post-partum hæmorrhage. If it does not occur, your rule is to wait up to one hour for the placenta to be expelled into the vagina. Then wait for a contraction of the uterus and try to express the placenta. If you fail, wait for another pain and repeat; if you again fail, send for a doctor. If you think a piece of placenta or placenta succenturiata has been left behind, send for a doctor; if membranes are left in the vagina, remove them; if in the uterus, leave them.

POST-PARTUM HÆMORRHAGE

Meaning of the term.—Post-partum is from the two Latin words, *post*, after; *partus*, birth. Post-partum hæmorrhage,

therefore, is bleeding after the birth of the child, whether occurring before or after the birth of the placenta. Normally, a woman loses blood during the third stage, and one-half to one pint is said to be about the average.

Post-partum hæmorrhage is divided into primary and secondary. Primary refers to hæmorrhage that occurs within six hours of the birth of the child, and secondary to hæmorrhage that occurs later than this. Secondary hæmorrhage is nearly always due to a retained piece of afterbirth, usually a bit of placenta, in the uterus. The treatment is the same as for primary hæmorrhage. Hence this arbitrary distinction between primary and secondary will not again be mentioned, for when a woman bleeds after the birth of the child so as to be in danger of her life, you must stop it by the same means, no matter when it occurs.

Danger.—Of all conditions met with in a child-bearing woman none is more terrible than post-partum hæmorrhage. To a midwife there is no other condition of equal gravity. The child is born, when suddenly a great stream of blood gushes out of the vulva, and the patient will be dead sometimes in a few minutes, unless the nurse with command of her own powers promptly stops the flow of blood. In the worst cases her efforts may not avail, but in the great majority of cases the patient's life depends on her promptitude and skill. She has no time to get a doctor to help her. The question between life and death may be decided in a few minutes, or even moments.

Fortunately, these very urgent cases are rare. More frequently bleeding is less violent, and the dangerous effects in the woman consequently develop more slowly.

But any loss of blood which affects the woman and makes her pale, weak or faint must be stopped at once. Dangerous symptoms will come on unless this is done.

Distinctions.—There are two kinds of post-partum hæmorrhage that are of practical importance: 1, the bleeding that results from a tear of some part of the pelvic canal; 2, the bleeding that results from absence of proper retraction and contraction of the uterus.

Bleeding due to tears.—Either the perineum or the clitoris and vulva at the side of the urethra may be torn. From a tear of the perineum serious bleeding is rare. A tear of the front of the vulva may lead to severe bleeding. Sometimes the bleeding occurs under the skin and a labium may be made to swell up and become blue with blood, a condition known as *HÆMATOMA VULVÆ* (*haima* Greek, blood; *oma*—Greek, a swelling). A hæmatoma vulvæ is then a large egg-shaped swelling of the vulva, which continues to get larger, and which is the blue colour of a recent bruise.

The vagina and cervix may also be torn and bleed.

How to tell the bleeding comes from a tear.—Feel the uterus. If it is hard and contracted, the bleeding is from a tear.

In spite of the hard uterus, the flow of blood is free and continuous. Sometimes you can see the tear of the perineum or front of the vulva and see blood coming from it. Indeed I would call upon you to pay attention to this point. When bleeding occurs, feel the uterus. If it is hard, quickly look at the vulva. Open it with your fingers and see if there is a bad tear in front or behind.

It is no good your trying to diagnose a bleeding tear of the vagina or cervix. A very hot vaginal douche, which, as I will soon tell you, is one of your means of stopping post-partum hæmorrhage, will stop bleeding from these tears.

Remember that severe bleeding from tears is rarer than bleeding from the uterus.

Treatment.—If you find continuous bleeding with a hard contracted uterus, look for tears of the vulva. If you find a tear, stuff the tear with wool or iodoform gauze, and keep the gauze pressed tightly into the tear with your fingers. You stop the bleeding, in fact, as you stop the bleeding of a cut finger, namely, by pressure.

If you find no vulval tear, give a hot vaginal douche, as hot as the patient can bear without great pain, or as hot as you can just endure to run over your own forearm. You see the importance of having your hot douche ready.

In any case, send for a doctor at once. Tell him the

case is one of post-partum hæmorrhage. He will stitch up the tears and stop their bleeding.

Position of Patient.—You remember your patient is on her back during the third stage. Keep her on her back, but turn her round into the cross-bed position, with her buttocks to the edge of the bed, when you treat her for post-partum hæmorrhage.

Bleeding from the Uterus.—Natural means of stopping the Uterus and Placental Site.—Retraction and contraction of the uterus squeeze the walls of the blood-vessels together and bleeding is stopped by pressure, much as you squeeze a bleeding finger by winding a handkerchief tightly round it. Clotting of the blood in the vessels then occurs, and the flow of blood out of the vessels is permanently stopped.

Causes.—In a sense, to find out the cause of post-partum hæmorrhage when once it occurs, is just as useless as to find out the reason why a horse is running away, before you try to stop it.

There are, however, two important causes of the absence of retraction and contraction : 1, the retention of either the whole or a part of the afterbirth in the uterus ; 2, a full bladder. The first is of great importance, and the second also has to be treated.

Other causes, which really have little or no practical bearing or treatment at the time, but are important from the point of view of the conduction of labour, are : 3, the dragging away of child by forceps from an exhausted uterus, or delivering a child by any other means from an exhausted uterus.

This is why the stretched uterus of hydramnios, or twins, which is readily exhausted, is apt to bleed. For this reason you allow the stretched uterus of twins a rest of half an hour before rupturing the membranes of the second child ; 4, ineffective efforts to expel the placenta from the uterus and not allowing it to do so itself. This leads to partial detachment of the placenta. The torn vessels at the area of partial detachment bleed, and the presence of the placenta prevents the proper retraction and contraction of the uterus needed to stop the bleeding. You

eradicate this cause by conducting the third stage properly ; 5, rarely a uterus bleeds which was feeble from the beginning. (In nearly all cases of primary uterine inertia, retraction is quite efficient in stopping hæmorrhage;) 6, some general diseases, those of the blood and blood-vessels especially, carry with them a tendency to bleed.

Practically, however, when you meet with a uterus that fails to retract and contract enough to stop bleeding, you will find that the causes which you can remove are the afterbirth, or remnants of afterbirth, and a full bladder.

Signs and Symptoms.—A certain amount of hæmorrhage, as I have said, is always lost in the third stage. The hæmorrhage that is called post-partum hæmorrhage may be defined as that amount of blood that causes the woman to be or look ill. For instance, a woman who is delicate, or who has already lost a lot of blood either from accidental hæmorrhage or placenta prævia, will quickly be brought to death's door by a slight loss of blood compared to the loss that can be safely endured by a robust and healthy mother.

When bleeding occurs, there may either be a rush of blood terrible to witness, or there may be intervals of arrest in the bleeding, during which the uterus fills with blood, and its outline becomes so enlarged and indistinct that your hand, watching for the firmness of the normal uterus, is made instantly aware of this departure from the normal. Either you yourself rub up the fundus to make the uterus contract, or the organ itself attempts a feeble contraction, the effect of which is, that there is a spurt of blood and blood clots from the vagina. Again, there is a cessation, and once more the contraction forces out liquid and clots of blood.

The effect on the patient is the same as that described on p. 146.

The red fluid which leaves her robs her lips and cheeks of their colour. She becomes pale. Her heart, enfeebled by the loss of blood, beats faster and more feebly. You find the pulse at the wrist 100, 120, 140, or uncountable. Her forehead is bathed in cold sweat. She sighs, feels

faint, becomes restless, struggles for her breath, hungers for more air, her mind wanders, and blindness may come upon her as she nears death.

Another factor that affects these cases is shock, which is often added to the collapse. Shock is different to collapse. Collapse results from loss of fluid, due to the loss of the water of the blood.

Shock, on the other hand, is a prostration of the mind that rules the body, an arrest of government. Some of the best examples occur when persons receive a fright, such as thinking they have seen a ghost. Their pupils are dilated, their faces cold, white and in a sweat, their muscles half paralyzed, so that they can scarcely support themselves, their pulse becomes very feeble, either fast or slow, their breathing is quick and shallow, their heads swim, and their senses may temporarily leave them in a faint. Yet with all these symptoms, which so closely resemble those of hæmorrhage, they have not lost a drop of blood.

Practically you need not distinguish between shock and collapse. If the woman shows sign of weakness and illness after labour, and is bleeding, your first business is to stop the bleeding.

Treatment.—The treatment depends on whether the bleeding is violent, or its effect on the woman immediate and urgent, or whether the bleeding is not so violent and its effects more gradual.

You yourself are the only trained person present at the case, and therefore you have to judge whether the case is one of grave urgency or not.

In all cases you should at once send for a doctor with all speed, with the message that the woman has post-partum hæmorrhage.

You should keep one woman at least in the room with you to help you.

Hæmorrhage occurring before the delivery of the Placenta.—**Urgent Cases.**—**Manual Removal of the Placenta.**—One of your hands; your right, should be clean during this stage. Dip it into the biniodide of mercury or corrosive sublimate

solution, if at hand. Get the woman quickly into the cross-bed position.

Open the lips of the vulva with your left hand. Put the finger-tips and thumb-tip of your right hand together, and push the hand in this manner into the uterus. You must not fear to do so. It is quite easy, and you have got to do it, if you want to save your patient's life.

Keep your left hand on the fundus of the uterus to steady it.

The first difficulty you may meet with is the contraction of the lower uterine segment, which was discussed on p. 81. Push your cone-shaped hand through the contracted ring and it will yield. With your fingers between the membranes and the uterine wall, push up to the placenta, and you will find by pushing your fingers between it and the uterine wall that the placenta, as a rule, peels off readily enough. Sometimes, however, it is adherent, and then you will have difficulty. You have to push and scrape it off, steadying the uterus the while with your left hand laid on the abdomen.

When you think you have separated the whole placenta, pull it away. But do not be satisfied. Again put your hand into the uterus to be sure if you got all the placenta away, or to remove remaining fragments. Do this again and again until you have got all away.

Further Treatment.—Knead the uterus between your hand in the uterus and your hand on the abdomen until you make it contract.

When you have made it contract in this way, take out your hand from the uterus.



FIG. 106.
Forming hand into cone.

Insert the vaginal nozzle of your douche into the uterus, and give it a douche of water as hot as your forearm can bear. Your douche can, or jug, should be three feet above the patient.

This will almost certainly stop all bleeding. Give ergot, two teaspoonfuls, by the mouth. The worst of ergot is that your patient will very likely be sick. Give it once and risk the vomiting.

Keep your hand on the uterus until the doctor comes.



FIG. 107.—Removing the afterbirth by the hand.

Rub the fundus, if the outline of the uterus begins to become indistinct or swells, rub up the uterus to a contraction and squeeze out clots. Get your assistant to raise the foot end of the bed two feet, or more, on chairs or a table, so as to make the blood run to the head, and also to make the amount of blood going to the uterus and pelvis from the heart be lessened, because it has to be forced by the heart uphill.

If, in spite of all this treatment, a further hæmorrhage occurs, you must compress the aorta until the doctor comes.

Compression of the Aorta.—The aorta is the great artery that runs down the front of the spine and from which the main arteries of the uterus are derived. Therefore, if you stop the flow of blood in the aorta, you will stop the bleeding of the uterus, just as you stop a leaking house pipe by shutting off the water supply at the main.

You must learn to feel the aorta beating in a woman. It is quite easy to do so. Take the centre of the fundus of the uterus in the third stage of a normal labour and sink your fingers above down to the spine. They will come down on the pulsating aorta. Familiarize yourself with this pulsating aorta in your cases and you will have no difficulty in compressing it.

To compress it shut up your fist and press on it with the ulnar (little finger) border of your closed fist. You press the aorta against the spine and so close its blood channel. You will not have to press very hard. When you get tired of doing it with one fist, turn round and press with the other fist. You can also put a weight on your fist to keep it down. Occasionally feel the uterus. If you feel it contracting, take your fist from the aorta and see if there is bleeding. If there is no bleeding, you can keep your hand lightly resting on the fundus to watch it, until the doctor comes.

Abstract of Treatment of Urgent Bleeding before delivery of the Placenta.—

1. Remove the afterbirth, or remnants of afterbirth.
2. Rub the uterus up to a contraction between one hand in the uterus and one on the abdomen.
3. Give a hot intra-uterine douche.
4. Raise the end of the bed.
5. If bleeding continues, compress the aorta.
6. If it stops, control the fundus

Cases not so urgent.—Rub up the fundus to make the uterus contract and expel the placenta. Pass a catheter.

If you fail, keep your hand on the uterus and wait for the doctor.

If the case becomes, or tends to become, urgent before the doctor arrives, you must treat it according to the rules already laid down.

Hæmorrhage after the delivery of the afterbirth—Urgent Cases.—Here you must adopt the same treatment as in urgent cases in which the placenta is not expelled.

Plunge your hand into the uterus. Feel round to be sure it is empty of bits of afterbirth, knead it between the

two hands to a contraction, squeeze out blood clots and give a hot douche into the uterus.

If kneading does not make the uterus contract, compress the aorta and get your assistant to raise the foot end of the bed.

Cases not so urgent.—You will be glad to hear these form the great majority of cases of post-partum hæmorrhage.

The order of treatment for these cases is the following—

1. Rub the uterus up to a contraction and expel the clots.
2. Give two teaspoonfuls of ergot by the mouth and pass a catheter.
3. If the uterus contracts, yet bleeding is continuous, stuff any tear of the vulva that seems to be bleeding with a pad of gauze or wool, and keep pressing on the pad until the bleeding stops. If there is no tear, give a hot vaginal douche, which will stop the bleeding of a tear of the vagina or cervix.
4. If the uterus does not become firm, or if it fills again after expelling clots and blood, give a hot vaginal douche of creolin solution.
5. Should bleeding still continue, introduce the nozzle into the uterus.
6. If the uterus fails to become firm, the case is one of urgency. Insert your hand into the uterus. Empty its cavity. Knead it. If kneading fails, raise the end of the bed and compress the aorta.

Treatment of the Collapse (or Collapse and Shock), which occur in these Cases.—Although you have succeeded in stopping the bleeding the patient is still very ill. She is collapsed from loss of blood, her pulse is very rapid, she is pale, faint or restless.

Probably by now the doctor has arrived and relieved you of responsibility.

If he has not come, raise the head of the bed at least a foot, open the windows wide and give the patient, occasionally, teaspoonfuls of raw brandy or whisky. Anything else by the mouth will make her sick, which will be a

dangerous strain on her enfeebled heart. Put blankets over her and hot bottles outside the blankets to keep her warm, for she has lost much hot blood. Keep a watch on the firmness of the uterus.

You are also advised, in many books, to bind her feet and legs from below up tightly, so as to squeeze their blood to feed the organs of the body rather than limbs that are not being used.

You will have to be skilled at bandaging firmly to do this, but if you have the skill and the bandages it is a sensible treatment.

When the doctor comes.—His treatment for post-partum hæmorrhage will be much the same as yours, for in breech delivery and in post-partum hæmorrhage you really have to act as a doctor.

He will sew up any tears; he may fill the uterus with iodoform gauze. For the collapse he will inject drugs under the patient's skin. He may infuse her, that is, put salt and water (a flush teaspoonful to the pint) into one of her veins or under her breasts to replace the fluid of the blood lost.

He may order you to give enemas of some salt and water. You can give two to three pints of saline very slowly and it will be retained. The method is similar to that described on p. 109.

INVERSION OF THE UTERUS

Meaning of the term.—Inversion of the uterus is a turning inside out of the uterus. The fundus dips down in the centre and appears at the cervix, or the uterus may actually come outside the vulva. The first is partial, the second complete inversion.

Frequency.—Inversion of the uterus is, fortunately, exceedingly rare.

Causes.—It is said to be due to pulling on the cord to try and deliver the afterbirth, or trying to express the placenta when the uterus is not hard and contracted,

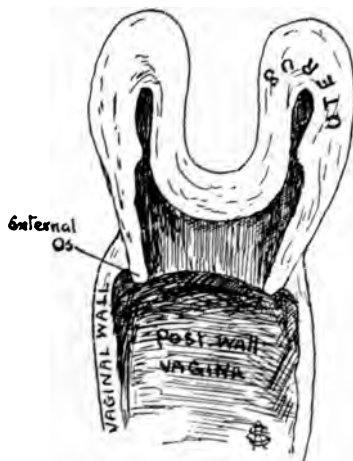


FIG. 108.
Partial inversion of the Uterus.

two sins I hope you will never commit.

Results. — Great shock occurs and remains as long as the uterus is inverted. Hæmorrhage will probably be severe.

Diagnosis. — Sudden shock and a disappearance of the fundus would give you the clue. A vaginale examination would discover the fundus either in, or protruded through, the os, which would surround it like a ring.

Treatment. — You must send for a doctor, but

you must treat the condition at once.

Put your whole hand into the vagina and push the uterus back, by catching it in your fingers and palm and squeezing it back through the os.

If an adherent placenta prevents you doing this, peel it off, and then push the uterus back.

You should remember this treatment, even though it is exceedingly unlikely that you will ever meet with a case. If you do remember, you may save the woman's life. If you do not, you will be useless.

PULMONARY EMBOLISM

Meaning of the term.—*Pulmo* is the Latin for the lung, and *embolus* is the Greek for something thrown in. Something then is thrown into the lung. The thing that is thrown in is a clot of blood from the uterine veins. It is thrown into one of the blood-vessels that feed the lung with blood.

Result.—The result is that that piece of lung's blood supply is suddenly shut off.

The patient has a severe pain in the chest, falls back, and is suddenly suffocated almost to death.

She may live a few minutes, hours, days, or even recover. Pulmonary embolism is very uncommon. It may occur soon after childbirth or any time in the lying-in.

Treatment.—Open the windows wide. Open the doors wide. Let her have plenty of air. Take the weight of clothes from her chest. Prop her up if she wants propping up, but let her choose her own position. Do not choke her by trying to pour spirits down her throat or making her smell smelling salts.

Summon the doctor at once, though he can do little more than you can at the time.

CHAPTER XXIV

THE ABNORMAL PUERPERIUM INSANITIES OF THE REPRODUCTIVE PERIOD

THE ABNORMAL PUERPERIUM

Duties of a Midwife.—Abnormalities of the puerperium, the lying-in period, are practically always some form of blood poisoning, mild, or severe. Now it is quite impossible for a midwife to learn how to treat such cases. To understand them one must have an efficient knowledge of medicine, of drugs, of microbes, and of infection. A little knowledge is apt to give the midwife the idea that she really is capable of dealing with the abnormal puerperium in its milder forms. I tell you bluntly that she is quite incapable of doing so. If she masters what was said on p. 136 about morbidity, she knows what she ought to know for an acting and practical knowledge of the abnormal puerperium. But if she fancies that, when the patient gets a rise of temperature on the third day, by saying that the rise is due to "milk fever" or "the milk coming into the breast," she is doing anything more than exhibiting the folly of an ignorance dangerous to her patient, she is mistaken:

I put this strongly, for many unfortunate women who are said to have a "little milk fever," and so on, are neglected, by midwives, and are condemned to suffer from aches and pains, if nothing worse happens to them, which mar the happiness or add to the burdens of their lives.

Section 4 of Rule 19 of the Central Midwives Board.—A doctor shall be called in

"4. In the case of a Lying-in woman, when there is any abnormality or complication, such as :—

"Abdominal swelling and tenderness,

"Offensive lochia, if persistent,

"Rigor (a severe shivering fit), with raised temperature,

"Rise of temperature above 100·4° F., with quickening of the pulse for more than twenty-four hours,

"Unusual swelling of the breasts with local tenderness or pain,

"Secondary post-partum hæmorrhage,

"White leg."

These are good rules, except the words "persistent" and "quickening" are vague.

With regard to persistent offensive lochia, I would give three days as the limit it should last. It will nearly always, however, produce "morbidity," and then morbidity, and not the offensive lochia, will be the reason why you inform a doctor.

A RIGOR (*rigor*—Latin, cold) is a shivering fit in which the patient's lips are blue and the teeth chatter.

If such occurs when you are not present, whether you find the temperature and pulse normal or not on your visit, report it to a medical man. It may be the sign of a very serious illness known as pyæmia.

INSOMNIA.—I would also add sleeplessness, especially if it has occurred two nights running, as a most necessary reason for summoning a doctor.

Morbidity.—The term morbidity (*morbus*—Latin, disease) is used in contrast to health.

Your patient is to be considered morbid if : 1, her pulse, after the first twenty-four hours after the birth of the child, is above 90 and her temperature is above 99° F. at the same time (Rotunda rule) ; 2, her temperature after the first twenty-four hours is 100° F. or above 100° F. (British Medical Association rule) ; 3, her temperature is under 99° F. but her pulse is over 100 per min. after the first twenty-four hours.

Treatment of a morbid case.—You should find out about the bowels and examine the breasts.

If the latter are very hard and the baby not sucking enough to empty them, you should use a breast pump to draw off the milk.

If the lochia is offensive, raise the head of the bed. This assists drainage of the lochia from the vagina. You do it by putting something under the legs of the top of the bed, which raises them two feet or so.

Give a purge, one to which the woman is accustomed, in full dose, so as to open the bowels.

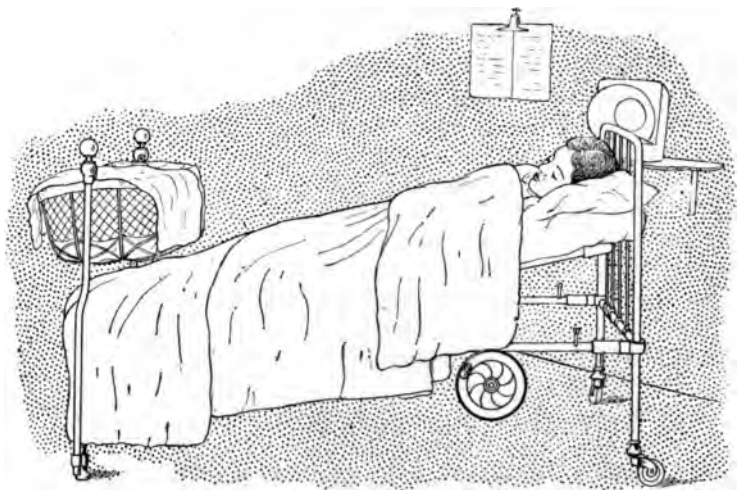


FIG. 110.—Rotunda bed (raised) and cot.

Examine the perineum to see if it looks healthy. Lastly, remember that a quarrel or other mind trouble may send the temperature of a lying-in woman up for one reading.

The Next Visits.—See the patient within twelve hours again and take her pulse and temperature.

If they are not morbid, well and good.

If your visit is in the morning, go again in the evening.

Inquire about shivering fits, for the temperature and pulse they cause may pass away quickly and not occur until there is another shivering fit.

If the woman is morbid, but does not seem ill, wait

until the next visit at the end of twelve hours. If, at the third twelve hourly visit, she is again morbid, inform a medical man.

If at the first or second visit she seems really ill, inform a medical man.

If she is normal, but later again becomes morbid, send for a medical man.

If she has a pulse of above 100 after the first twenty-four hours on these three occasions, especially if the second and third readings of the pulse are higher than the first, inform a medical man. There are two exceptions to this rule, the first, that it may be a nervous pulse. You exclude nervousness by taking the pulse, when you first go into the patient's room, and again later when she is accustomed to your presence, and not counting the first rapid beats of the pulse that occur when you first take hold of the wrist. The second exception is that if the woman has lost much blood at childbirth, her pulse in the lying-in will be rapid. It will, however, be a falling pulse, one that is less rapid at each taking and not more rapid, as it is with the pulse of definite blood poisoning.

"White leg" causes morbidity.

THE DIFFERENT DISEASES OF THE PUERPERIUM

I will now go on to give you briefly the different diseases of the puerperium, because they will interest you as nurses and midwives. I shall say very little about doctor's treatment, for it would not be possible to summarize the principles and experience by which he is guided.

Minor Causes of Morbidity.—We have dealt with these in treatment, namely, the effect of constipation, of nervousness, sometimes of full and tender breasts, and of a little lochia retained in the vagina that has become putrid.

More Serious Causes of Puerperal Morbidity.—**Causes.**—Remember those connected with the uterus are in the very great majority of cases due to microbes having been pushed up from unclean labia minora, or by unclean fingers or instruments. There has been defective cleanliness,

even though, apparently, care was used. In other words, if you have been attending the case alone, they are due to you. If, however, you have exercised every possible care, you need not blame yourself for the illness of your patient. If you have not, it is another matter.

Puerperal Ulcer.—This is an ulcer which forms, as a rule, on the torn perineum. It is red, raised, and angry looking, with a dirty yellow slough on it. The labia are swollen.

Perineal Abscess.—Some pus occasionally forms under the sutures of a stitched perineum. The perineum may look red and puffy and will be tender, when you press on it.

Sapraemia.—Sapraemia comes from the two Greek words,



FIG. 111.—Diagrams showing different positions of the non-pregnant uterus and vagina when the patient is sitting and lying. Position has the same effect on the puerperal uterus and vagina.

sapros, putrid, and *haima*, blood. It is then a condition of putrid blood, popularly called blood poisoning. It is due to microbes that live on dead material, such as retained lochia, retained pieces of afterbirth, or blood clot.

It leads to morbidity or rapid pulse, the lochia are offensive, heavy, and give the characteristic stain of unhealthy lochia with light centre and dark border. Sometimes they are retained in the uterus by a sharp kink in the cervix, sometimes there is a vaginal pool of retained offensive lochia.

The diseases may be slight. For example, a retained pool of vaginal lochia may drain away, when the head of

the bed is raised, or when the woman gets on the chamber to have her bowels open. In both these cases the upper part of the back of the vagina is raised above the level of the vulva, and so the putrid lochia which is poisoning the woman runs out.

In the cases, however, where the foul lochia is in the uterus, especially when shreds of the afterbirth have been left, the patient will probably become seriously ill, if left without medical help, and she is always in danger of septicæmia, pyæmia, peritonitis, or white leg.

Septicæmia.—Acute Puerperal Sepsis.—This is the most serious form of blood poisoning. The microbes are not content to stay and live on the dead material in the uterus, but they invade the body itself, and attack and destroy the living tissues. So severe is it that a woman may be attacked within thirty-six hours of childbirth and be dead within another twenty-four hours.

Such a woman will certainly appear so ill at your first visit that you will call in a doctor at once. She will very likely have a rigor at the onset of the illness.

The microbes in this direct invasion of the living body either enter by the lymph vessels (lymphatic sepsis), or by the veins (venous sepsis).

IN LYMPHATIC SEPSIS, the pulse and general appearance of the woman are the reliable tests of illness. The pulse is always over 100 and gets faster and feebler. The patient's face gets pinched, sallow, and her lips are tremulous. Her temperature may never rise above normal. Hence the importance of taking the pulse and sending for the doctor, if the pulse on three occasions is above 100, especially with an increasing rate. As a rule, her temperature is raised and remains raised until death, or, what is more rare, recovery.

IN VENOUS SEPSIS, or pyæmia (*pyon*—Greek, pus; *haima*—Greek, blood), the microbes live on the blood clot in the veins. They soften the blood clot, which is then swept into the blood stream. The result is that the patient has a rigor, her temperature rises suddenly to 103° or so, her pulse 100 or 120. She then breaks into a profuse sweat, her

temperature and pulse fall to normal, and she appears to be and feels quite well. She may tell you she has had a chill, but now is all right. You find her well and overlook the rigor. But within a few hours, or a day or two, she has another rigor, fever and attack of sweating, and you see she is beginning a very severe, and often fatal, form of illness called venous sepsis.

It is because of the possibility of venous sepsis I advise you to report to a doctor when you get a definite history of severe shivering, fever, headache, sweating, and recovery, and yet at your visit you find both temperature and pulse normal.

Pyæmia starts, as a rule, about a week after the birth of the child. Sometimes it starts as late as three weeks.

In nearly all cases there will have been some previous mild microbic poisoning, shown by the temperature and pulse. If you detect this minor morbidity early, the doctor by washing out the uterus and taking other measures, will be able to prevent the onset of pyæmia.

Now you see the importance to your patient of adhering to the rules I have laid down.

Pelvic Inflammation.—Another serious form of inflammation, which may follow a slight morbidity and which emphasizes the necessity of detecting and reporting morbidity, is inflammation of the pelvic tissues surrounding the uterus.

It begins at the end of the first week or later (preceded by a little fever, rapid pulse, or foetid lochia), often with a rigor, a temperature of 103° to 104° , a rapid pulse with severe pain and tenderness in the lower abdomen, which causes the patient to draw up her legs. She is also flushed, has a headache, and looks ill.

Special names are given to pelvic inflammation according to the special tissues most attacked. You need not remember them, but I give them to you as you might like to know them.

PARAMETRITIS (*para*—Greek, near; *metron*—Greek, the womb; *itis* Greek, inflammation) is inflammation of the supporting tissues of the pelvis, what one might call the

padding of the pelvis, the tissues into which the uterus, rectum, and bladder fit.

PERIMETRITIS (*peri*—Greek, around; *metron, itis*) is inflammation of the peritoneum (the transparent membrane which lines the abdominal cavity and covers the abdominal organs) in the neighbourhood of the uterus.

SALPINGO-OOPHORITIS (*salpin*—Greek, tube; *oon phoros*—Greek, the egg-bearing organ or ovary; *itis*—Greek, inflammation) is inflammation affecting the Fallopian tube and ovary.

Acute Peritonitis.—Perimetritis was inflammation of the peritoneum covering the uterus. This peritoneal inflammation may spread to the peritoneum covering other abdominal organs, such as the bowels. The disease is called acute peritonitis. Its onset is similar in all respects to the onset of pelvic inflammation, but whereas the majority of the cases of inflammation limited to the pelvis recover, though often with shattered systems or constant pelvic pain, the more general inflammation is invariably fatal.

Phlegmasia Alba Dolens, or White Leg.—Phlegmasia is from the Greek *phlegein*, to burn, *alba* is the Latin for white, *dolens* the Latin for painful. A painful white burning is the meaning of the title.

It occurs in the legs, usually the left first, followed perhaps by the right. It begins about a month to six weeks after the birth of the child. It is preceded during the lying-in by a little blood poisoning, so that in your attention in the puerperium you must pay heed to slight signs of morbidity. In fact, all the diseases I have been mentioning will show you the importance of doing so.

The onset is with violent acute pain in the leg accompanied by fever and swelling of the leg. The leg in a day or two is large, white, and painful.

Treatment.—Keep the woman absolutely at rest. On no account move the affected leg. Send for the doctor.

The danger of these cases is that the blood clots in the big veins of the thigh, and a piece of clot may be broken off, swept to the lung, and kill the woman by pulmonary embolism. The leg is kept still by sand bags, a cradle

keeps off the bedclothes, and the woman is not allowed to move, not even to help herself on to the bed pan, without the doctor's permission.

The leg feels heavy and may swell with walking for months or years after the illness.

Inflammation of the Breasts, Mastitis.—

Meaning of the term.—Mastitis is from the two Greek words, *mastos*, breast, and *itis*, inflammation.

Cause and Sign.—You frequently find a cause of mastitis in a cracked nipple. By looking you see the crack or sore in the skin of the nipple. It may come on at any time of lactation.

Treatment to prevent Cracked Nipples.—Many advise you to teach primiparæ to pull out the nipples daily one month before the child is born, if the nipples are depressed. They also advise you to harden the skin of the nipples by bathing with some form of spirit, such as whisky. But a woman will often scratch and injure the nipple if she tries to pull it out. If you do it yourself occasionally with clean fingers, you may do so, and you may do good. As regards hardening the skin, I am not sure that a hard skin cracks less or more readily than a supple skin. Certainly during pregnancy, as at other times, the nipples should be kept clean by daily bathing, and they should not be pressed upon by corsets.

Treatment of Cracked Nipples.—The curing of a cracked nipple is the best way of preventing inflammation of the breasts. The nipple is cleaned before and after a feed with clean wool, warm water, or boracic lotion, as a routine during the puerperium. When a cracked nipple occurs, paint it three times a day with Friar's Balsam. This makes the crack smart, but will cure it.

If sucking at the cracked nipple causes much pain, advise a nipple shield until the nipple is well.

Management of a Nipple Shield.—The proper management of a nipple shield involves a few minor points. If the baby refuses to suck the shield's nipple, squeeze a little breast milk into the shield



FIG. 112.
Nipple
Shield.

and wet the surface of the nipple with milk. This will induce the baby to suck.

Scrub the shield before and after use with a brush and soap and water, keep it immersed in a solution of washing soda and boil it once a day.

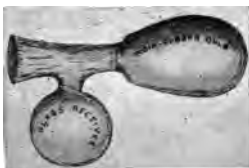


FIG. 113.—Breast Pump.

Mastitis.—In mild mastitis the breast is engorged, there may be a pink flushed area of skin, there is a sense of fullness and tenderness in the breast, which hangs down from the weight of the con-

tained milk, the temperature is a little raised, and the patient feels unwell, but is in no way really ill.

Treatment.—Do not take the baby from the breast, for its sucking relieves the engorgement. If the baby will not suck, use a breast pump, or gently rub and squeeze the breast from the base to the nipple with your two hands, made slippery by soap and water. If this causes pain, desist. If not, continue whilst you gently express milk from the nipple.

To use the breast pump, wet the circular edge a little. Squeeze the rubber bulb. Fit the mouth over the nipple, so that the milk runs into the reservoir and slowly release the squeezed bulb.

Then bandage the breasts. Put strips of linen or lint rung out in cold water, or cold boracic solution, cover with wool and bandage the breast against the chest, leaving a hole for the nipple, so that the baby can suck. If you have not bandages, you must sling the breast up as best you can with



FIG. 114.—Bandaged breast.

scarfs, for the sagging down of the full breast is what you must avoid. Do not use hot poultices.

Give the woman a purge.

If the temperature is not down and the breast better in twenty-four hours, inform a doctor, for the case may be going on to ABSCESS OF THE BREAST, which he will have eventually to lance.

Secondary Post-partum Hæmorrhage.—As I have said, this is usually due to some remnants of afterbirth left in the placenta. After vesicular mole, or abortions, and sometimes after full-term deliveries, it may possibly be due to a rare and rapidly growing form of cancer, which affects the puerperal uterus and is known by the names chorio-epithelioma, or deciduoma malignum, names you need not remember. Anyhow, when a gush of blood occurs in the lying-in, you should inform a doctor.

INSANITIES OF THE REPRODUCTIVE PERIOD

Causes.—Reproduction is the test of a woman and should she be in any way physically or mentally weak, she is apt to give way under the trial.

Secondary causes are : 1, drink ; 2, toxæmia of pregnancy, thus mania may follow eclampsia ; 3, acute pain ; a woman may become a raving lunatic, when the head of the child is distending the vulva ; 4, puerperal sepsis ; 5, severe hæmorrhage with the anæmia it causes ; 6, prolonged lactation is a severe strain to an unstable woman ; 7, insanity, as you might expect, is more common if the woman is unmarried.

Kinds of Insanity and Percentages.—THE INSANITY OF PREGNANCY includes about 10 per cent. of the cases. They are chiefly of the melancholic type, that is, the patients are depressed. In any case of insanity they have delusions and tend to be suicidal.

THE INSANITY OF LABOUR forms under 1 per cent. The type is acute mania. They become raving lunatics.

THE INSANITY OF THE FIRST SIX WEEKS AFTER DELIVERY

forms some 60 per cent. of the cases. They are commonly maniacal in character.

THE INSANITY OF THE LACTATING PERIOD makes up the remaining 30 per cent. The type is usually melancholic.

Symptoms.—INSANITY OF PREGNANCY.—In pregnancy some change in character of the woman is common. Only when it passes into definite delusion does insanity become established. The onset of the insanity of pregnancy is recognized by an exaggeration of this change of character. From about the fourth month to any time later in pregnancy, the woman becomes moody, irritable, apathetic. *She fails to sleep as usual.* Insomnia, or failure to sleep, in the reproductive period is always serious; when severe, it so often means the onset of insanity. Then the patient gets definite delusions. If she vomits, she thinks some one has poisoned her. She sighs, groans and nothing can shake her from her misery. She may be suicidal. She is commonly constipated. She may get well before the birth of the child or not until after its birth. In rare cases she does not get well at all. This form of insanity is probably frequently due to the toxæmia of pregnancy.

INSANITY OF LABOUR.—The patient is suddenly seized with a frenzy. She is dangerously mad. She may take the child when born and dash its brains out against the iron of the bed or otherwise destroy it. The attack usually passes off rapidly.

INSANITY OF THE PUERPERIUM.—This is nearly always associated either with severe anæmia from hæmorrhage, or with sepsis. The patient is at first irritable and uneasy about unknown dangers. She has a headache. She may refuse food. She is constipated. Above all she *sleeps badly*. She dislikes to see either her child or husband. She, finally, becomes definitely maniacal. She may have suicidal impulses. She will probably get well. About 80 out of 100 recover.

INSANITY OF LACTATION.—The patient is not in full health. She is probably a woman who has children in constant succession. She becomes gloomy, constipated, and *sleeps badly*. She becomes definitely melancholic,

with delusions and may try to commit suicide. The outlook is not quite so good as it is in puerperal insanity.

Treatment.—Whenever you have suspicions about your patient's sanity, take the baby from her, if she has one, and inform a medical man.

He will try to stave off or cure the insanity by attention to : 1, plenty of sleep ; 2, plenty of food ; 3, the avoidance of constipation.

CHAPTER XXV

THE HEALTHY BABY

The Healthy Baby.—The great majority of babies are born healthy. Even the babies of mothers with consumption or heart disease are often born healthy. Any one, too, who sees a large number of babies born in the poorest circumstances must be impressed by their capacity for health. They are firm, fat and chubby. They are given a good start in life. Their danger comes, when, though healthy little animals, they have to battle with the disadvantages of civilization.

A healthy child is plump, is not sick, takes the breast or its bottle readily, does not have wind, has the bowels opened three to four times in the twenty-four hours in the first six months. A healthy baby ought to cry lustily, but does not cry frequently nor long, certainly not more than half an hour at a time. Its temperature, taken in the rectum, should not be above 100° F. after the first three days. The pulse is variable. The faeces are soft, yolk yellow, never green, nor have they white curds. The skin is clear without spots, the skin of the buttocks is not raw and red, and the tongue is clean without one patch of white.

A healthy baby increases in weight about seven ounces a week, for the first two or three months, with the exception of the first week. Breast-fed babies illustrate this rule with most regularity. Bottle-fed babies are more uncertain.

A baby's forehead should not be damp with sweat when it is in its cot or perambulator. Sweating usually means that it is too heavily clothed.

Finally, the condition of the anterior fontanelle is an excellent guide to the baby's health. In a healthy baby it is flush with the level of the bones. In ill-health it is sunk. In brain disease it may bulge.

These, therefore, are the signs by which you judge of a healthy baby.

GENERAL DIRECTIONS FOR THE MANAGEMENT OF A HEALTHY BABY

It is wisely taught at the Rotunda that the first three days of a baby's life exceed others in importance. It is then that interference with the wishes of nature are frequent and are most detrimental to the health of the baby.

Urine.—The baby should pass its water within the first twelve hours. Inquire at your first visit if it has done so. If you are told it has not done so, it not infrequently means that the woman who is looking after the baby has let the napkin dry.

Wash with wet cotton-wool the orifice of the baby's urethra, give the baby a teaspoonful of cold water and dip it into a hot bath. Put your hand over the urethra and you will feel the stream of urine. If you do not, you need not be anxious if you do not feel the full bladder as a round swelling above the pubes. Try hot flannels over the lower abdomen. If you feel a full bladder, or if the baby has not passed its water for twenty-four hours, you must inform a medical man.

Meconium.—Meconium is from the Greek word *mee-konion*, poppy juice, because the motions the baby passes for the first two or three days are dark green, like poppy juice. The bowels should be opened about six times in the first twenty-four hours. If, within twelve hours of birth, no meconium has passed, put the tip of your little finger up the anus. When you withdraw your finger meconium nearly always follows.

When the ANUS IS IMPERFORATE, that is to say, when the channel between it and the rectum is closed, as it sometimes is, your finger will be stopped by the obstruction.

If you find this, inform a medical man at once.

Always examine a baby's napkins. The colour and condition of the stools is an excellent measure of the health of the digestion of the baby. This you will see, when you read the next chapter.

The Digestive Organs.—None of the baby's organs spring at once into full working action suited to its changed conditions. But for long-past times mothers, nurses, and even doctors have treated the baby's stomach as if it could at once begin work. Frequently, after a baby is born, it is given a little castor oil, some butter and sugar, milk and water, or the top of gruel. Have nothing to do with such practices. The milk does not begin to flow from the breast until the third day of the puerperium. The baby does not want milk until then. A little yellow fluid is secreted from the breast; this is called the colostrum, and this the baby gets by sucking the breasts.

Some fancy this colostrum has a purgative action. It may have, but it seems more probable that it trains the stomach to digestion and starts the digestive functions gently.

Early Flow of Milk.—In some cases the breast milk is abundant on the second day. In these cases the baby is apt to take too much milk too early. Put it to the breast sparingly to prevent this.

Late Flow of Milk.—In other cases, the milk does not appear until the fourth or fifth day. The baby gets hungry and cries. Give it teaspoonfuls of fresh cow's milk diluted with two parts of water, or the mixture (p 271), after putting it to suck what it can from the breast.

Breast Feeding.—You must hold as an article of faith, both from your belief in the wisdom of nature, and from the facts noted and collected over and over again by doctors, that breast feeding will produce a stronger, healthier and more resistant child than artificial feeding, though the artificially fed baby may look ever so fat and plump. It is your duty, to the baby, and to the nation, to strongly urge a reluctant mother to feed her baby on the breast. If you ever attempt to dissuade a woman from

breast feeding or acquiesce in her selfish whims, you are betraying your profession.

Times of Feeding.—Let the baby be put to the breast some six hours after its birth, if the mother is awake. Twice in the first twenty-four hours, three times by day and once during the night for the second twenty-four hours, suffices.

If the baby cries from thirst, give it teaspoonfuls of fresh tap water.

From the third day onwards, let the baby take the breast every two hours during the day, and once during the night.

Thus, the baby is fed at 6, 8 and 10 a.m., 12, 2, 4, 6, 8, 10 p.m., and at 2 a.m. Insist above all on regularity. Wake the baby up, if it is asleep at the appointed time. Sometimes it is difficult to wake a baby, or the sleepy baby refuses to take the breast. If so, let it sleep until the next appointed hour arrives. The discipline of regularity in meals is good for babies, as for adults, and lays the foundation of sound health and good temper.

A baby has a tendency to sleep by day and be wakeful at night. This tendency can be counteracted to the advantage of the parents by feeding the baby once only during the night. Once give way to the baby's crying and allow it to be fed constantly at night, there will be little peace. In plain words, the mother must gain the upper hand and not be bullied by the baby's irregular clamouring for food. The child, if dealt with in this manner, soon falls into the paths of discipline and gains thereby the advantages of a well-ordered mode of existence. But if the mother yields to the child and stills its cries by the offer of the breast, the child's digestion is upset, and both its health and temper suffer proportionately.

Upon digestion depends health, upon discipline stability of character. You can assist by your advice in laying these foundation stones to an useful life.

Method of Breast Feeding.—When the mother is in bed, she turns on the side of the breast which is to be used, and gives the nipple, which has just been washed with clean cotton-wool and warm water, to the baby. She must

be careful not to jam the baby's nose against the breast, so that it cannot breathe freely when sucking. Sometimes when the mother thinks the baby is too weak to suck, you will find by watching the suckling that this is the true reason.

Put the baby to one breast only for a feed. The other breast is used for the next feed. If only one breast can be used, it is better to give up breast feeding, or at least to give the bottle alternately, for the milk that forms in the breast every two hours is generally too thin and poor in quality to nourish the baby. You can tell how the baby progresses on one breast by weighing it (p. 280).

Twins.—The same remark applies to twins. If they do not increase in weight, one must be weaned.

How Much shall the Baby Have ?—Our rule at the Rotunda is—and it applies to both breast and artificial feeding—let the child have as much as it will take without possetting, that is, returning some of the milk. If its stomach is too full, the child will posset the extra quantity. When it possets, give it less next meal. You can judge of the amount swallowed by the time the baby is at the breast. If the baby feeds for twenty minutes and possets, give the breast for fifteen minutes next feed, and so on until the longest time the baby will feed without possetting is found.

Care of Nipples.—Let the nipples be washed with boracic acid lotion and then dabbed with a little weak spirit (brandy and water, equal parts) to harden the outer skin. This is necessary now, for the warm moist mouth of the baby makes the skin sodden. Before suckling wash them with wool and warm water. The nipples may be depressed, yet it is astonishing how a baby will draw them out. Speaking accurately, the action of a baby's mouth is to press back the tissues away from the nipple rather than to draw it out. This action the mother can also assist by pulling back the tissues around the nipple with her fingers or pressing them back with an umbrella ring. If the baby cannot get the nipple, let it try daily, and if you are a monthly nurse, draw the nipple out yourself several times a day with clean fingers. The baby will have to suck

through a nipple shield, just as when the nipples are cracked (p. 257).

Attention to the Nursing Mother.—Nursing women tend to eat too much. This is especially harmful during the lying-in period. They are encouraged to stuff, and stuffing brings on indigestion. Tell your patient to eat as much food as will not cause her indigestion, and to keep her bowels open by drinking plenty of fluid, eating fruit or green vegetables and, if necessary, by medicine to which she is accustomed. There is a popular objection to fruits and green vegetables, but they do not do any harm.

If the milk begins to run short, give the mother more fluid. There is a popular fallacy that milk given to the mother comes out as milk from her breast. This leads to the mother drinking milk between her meals, which takes away her appetite and gives her indigestion. Again, there is a popular notion that stout and beer given to the mother produces more milk in her breast. This is probably right, for the reason that the mother must take plenty of fluid in order to have plenty of milk. Let her take milk, water, or, if she is accustomed to them, beer and stout at her meals, and water between her meals.

Nervous shocks, too many visitors, and unwise statements of nurses themselves, such as that the mother is too weak or the baby too strong, all discourage a woman from efficient nursing. Avoid all such discouragement, but urge regular breast feeding, and be very chary of any change. Finally, a nervous woman may find nursing very painful. Point out to her the great advantage breast feeding is to her baby. Even a week at the breast is a great advantage to the child.

Times of Feeding in Later Months.—After the end of the first month, let the baby be fed every three hours during the day, and once during the night. From the sixth month up to the time for weaning it has three hourly feeds and sleeps throughout the night.

Women who cannot Nurse.—1. Women who have some general disease, such as consumption or heart disease.

2. Women who have no milk. Rarely women have no

milk ; more commonly deficient milk is due to keeping the baby from the breast and avoiding the stimulation of suckling.

3. Women with persistent morbidity.
4. Women with inflammation of the breast.
5. Women who are insane.
6. Women who are weak from loss of blood.
7. Women whose health is genuinely injured by lactation.
8. Women who have to go out and work for their living.
- 9 Some women, for personal reasons, refuse to nurse their babies. Urge upon them that the breast milk belongs to the baby, and lay emphasis on the risks of artificial feeding.

How to Stop the Flow of Milk.—A tight binder round the chest, put on after labour, will prevent the onset of the milk in practically all cases. In later cases you do the same, first, however, covering the breasts with lint, on which you spread an ointment (yellow wax 1 part to olive oil 8 parts, warmed before spreading). Give also a saline purge. Should the breasts swell and be tender, use the breast pump sparingly and repeat the treatment.

Babies that must be Spoon-fed.—

1. Babies with cleft palates or bad hare-lips.
2. Babies with ulceration round the mouth. In these cases you must inform a doctor of the baby's condition.

Wet Nurse.—A wet nurse is the next best method of feeding a baby, provided the doctor can get one to his entire satisfaction—a very difficult matter.

Artificial Feeding.—Cow's milk is the most convenient food for infants next to human milk. Asses milk is said to resemble human milk more closely, but it is difficult to get.

Composition of Milk.—The milk of animals of course contains the five essentials of life, namely : 1, water ; 2, salts ; 3, proteid or meaty matter ; 4, carbohydrate (starchy and sugary) food ; 5, fat.

The proteid or meat of milk is known as casein and enters largely into the composition of cheese.

The carbohydrate of milk is in the form of milk sugar. Adults take their carbohydrate food more in the form of starch, such as the flour of bread. It is changed by the

digestive juices of the body into sugar. But the digestive juices of the baby are deficient in this power of turning starch into sugar. As its carbohydrate food is naturally in the form of milk sugar, it does not matter. To repeat then—the essentials of milk are :

1. Proteid. Known as casein, dissolved in the milk, but made solid when the milk is curdled as by rennet. The casein forms the greater part of the curd of milk, the rest being entangled fat globules.
2. Carbohydrate. In milk this takes the form of milk sugar, also known as lactose.
3. Fat. The fat of the milk occurs in small suspended fat globules, which rise to form cream, this by churning forms butter, and this largely gets caught in the curd of milk.
4. Salts. These are of various kinds. You need not trouble about them.
5. Water.

Differences between Cow's and Human Milk.—Cow's milk differs from human milk in having about twice as much proteid. The amount of sugar and fat is much the same as in human milk. Different samples show different results, the amount of fat being most variable. For practical purposes the above is correct.

Dr. Hutchison gives the following compositions of cow's milk and human milk during the first month of lactation.

	Cow's Milk.		Human Milk.	
Water . .	87 to 88 per cent.	. .	87 to 88 per cent.	
Proteids . .	2 to 3	„ . .	1.1 to 1.5	„
Sugar . .	4 to 5	„ . .	6.2 to 6.4	„
Fat . .	3.5 to 4.5	„ . .	3.1 to 3.8	„
Salts . .	0.7	„ . .	0.25	„

The curd of milk is harder than that of human milk, and this is an important fact, for milk always curdles directly it reaches the acid juices of the stomach. The hard curd of cow's milk is more difficult of digestion than the flocculent curd of human milk.

Cow's milk, unless immediately fresh from the cow, is

acid from the presence of quantities of microbes that grow in it. Human milk as secreted from the breast is alkaline.

For this reason it is important that the cow's milk should be as fresh as possible. It certainly should not be more than twenty-four hours old.

How to alter Cow's milk to make it like Human Milk.—It is now easy to work out a method of altering cow's milk to make it resemble human milk.

1. The proteid or curd is twice as much in cow's as in human milk. Dilute the milk with an equal quantity of barley water. The amount of proteid will be halved and will approximately be the same as that of human milk.

2. The fat and sugar in human and cow's milk are in about the same proportion. The same dilution with barley water halves the amount of fat and sugar in the cow's milk. By adding two flush teaspoonfuls of milk sugar (or one teaspoonful of Demerara sugar) and two teaspoonfuls of centrifugalized cream (which contains 45 per cent. of fat) to every six ounces of the above mixture, you again restore the proper proportion of fat and sugar.

3. The curd of cow's milk is in larger and harder lumps than that of human milk. Barley water mechanically divides up the curd of cow's milk. Citrate of soda (which you can buy at the chemist's), a small pinch to every ounce of milk, or the use of lime water in the place of barley water, makes the curd more flocculent.

4. The cow's milk is acid from microbes that get into it from the air, while human milk coming straight from the sterile breast is alkaline. The less cow's milk is allowed to stand and the fresher it is, the less acid it will be. It is best kept in covered earthenware jars in a cool place. Lime water is antacid and may be used in place of barley water.

5. The microbes are destroyed as far as possible by some form of sterilization.

The Mixture.—We now have our standard modified milk, which resembles human milk, as closely as we can make it by simple methods, namely :—

Cow's Milk, 3 ozs., or 6 tablespoonfuls.

Barley Water, or Lime Water, 3 ozs., or 6 tablespoonfuls.

Milk Sugar, 2 drachms, or 2 teaspoonfuls.

Centrifugalized Cream, 2 drachms, or 2 teaspoonfuls.

Citrate of Soda, 3 grains, or a pinch.

How to Give the Mixture.—Do not give the undiluted mixture until the third day. During the first twenty-four hours give the baby the mixture with three-parts of water for three feeds. During the next twenty-four hours give the same for six feeds. This dilute mixture is intended to take the place roughly of the colostrum. On the third day use the above mixture as an exact substitute for breast feeding, as regards time and amount. The quantity required will be between one and three ounces for each feed.

Its Constituents.—BARLEY WATER is made by adding two teaspoonfuls of well-washed pearl barley to a pint of water. Boil for a quarter of an hour. It must be freshly made morning and evening.

LIME WATER is a saturated solution, and is made by shaking unslaked lime with water in a clean bottle. Let this stand until the fluid is clear and then pour off the clear fluid. It is better to make lime water than to buy it.

MILK SUGAR can be bought from chemists. Dark Demerara sugar does almost as well, but one smoothed teaspoonful is equal to two smoothed teaspoonfuls of milk sugar.

CREAM that has been centrifugalized at a dairy contains between forty to forty-five per cent. of fat. If you cannot get the centrifugalized cream, set aside some good fresh milk for about six hours and skim off the cream. This will contain about 15 per cent. of fat and you will therefore want five to six teaspoonfuls in the place of the two of centrifugalized cream.

When the Baby is a Month Old.—The belief at the Rotunda is that, for a baby of a month old, there is no artificial food so good or easy to give as undiluted cow's milk. If you can get the baby nursed for a month, it is a great advantage, for the digestion is much more certain and stable at

the end of a month. We then put the baby on undiluted cow's milk, giving water between meals to allay thirst. We do not believe a baby's digestion is as dainty as it is supposed to be when only a month old. If water is added to the milk, not only is the milk diluted, but so are the digestive juices. It is not easy to tell whether the advantages of diluted milk outweigh the advantages of diluted digestive juices. But practice has solved this question for us, for we certainly get better results with whole milk than with diluted milk.

Feeding with Pure Cow's Milk.—Undiluted cow's milk offers a baby the right amount of fats and carbohydrates. Only the casein is in excess. This excess is passed in the stools. The stools are large, they are often whitish from the extra unused curd of the milk (which matters nothing so long as the baby is well), and there is rarely constipation. The milk and the milk mixture given throughout the first month, are always sterilized before use. Boiling impairs the nutritive qualities, whereas what is known as sterilization hardly does so. Sterilization does not kill all the microbes, and babies have been known to die of acute bowel poisoning, although only fed with carefully prepared sterilized milk. These cases, however, are very rare and the better nutritive qualities of sterilized milk, as compared with those of boiled milk, warrant the risk of such rare disaster.

We add a small pinch of citrate of soda to each ounce of whole milk.

Water and Times with Pure Milk.—Pure milk has not as much fluid as the baby requires. Therefore give the baby teaspoonfuls of water between meals. Pure milk is also a more concentrated food and feeds need not be so frequent. Every three hours is sufficient, and after the third month four-hourly feeds suffice.

Method of Sterilization.—The apparatus used at the Rotunda is the Soxhlet Milk Sterilizer. It consists of a cruet, which holds ten bottles and fits into a saucepan. The bottles are filled with milk or mixture, one feed to each bottle, which will mean $2\frac{1}{2}$ to 5 ounces the first six months and between 5 and 10 ounces the second six months. Cover

the mouth of each bottle with the little rubber cap. Pour water into the saucepan, until three-quarters of the height of the bottles are immersed. Raise the water to boiling point. The milk in the bottles does not itself boil. It attains a temperature of 160° to 170° F.

The mixture is kept in the boiling water for ten minutes, for a longer exposure diminishes its nutritive qualities. Whole milk is kept in the boiling water for half an hour, until the baby is over four months, after which a quarter of an hour suffices. It is best to sterilize morning and

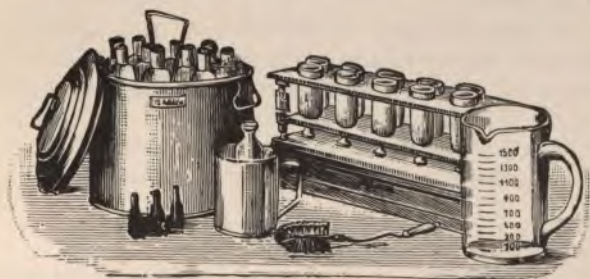


FIG. 115.—Soxhlet's Sterilizer.

evening. The rubber cap, which gets sucked a little into the mouth of the bottle as the latter cools, keeps the air from the contents.

Cool the milk rapidly by plunging the bottles into cold water.

Giving the Baby the Bottle.—When the baby is to be fed, the nurse or mother takes one bottle, warms the feed in it by putting the bottle in warm water, removes the cap and with clean fingers fits on a rubber teat. These rubber teats must be scrubbed inside and out (they can be turned inside out), boiled once a day, and kept in soda solution. The baby is fed straight from the bottle. There is, of course, no air vent to the bottle, but the baby manages its feed successfully, letting go of the teat occasionally to let in air. If it seems to have difficulty, see whether the hole in the teat is large enough. Feeding by the bottle takes a long time. You may have to hold the bottle for the

baby for half an hour, for the baby always must be fed. It must never be allowed to suck the bottle in its cot, sleep, wake, and suck again.

After the Sixth Month.—The first teeth come about the sixth month. When they appear it is a good plan to thicken the feeds with a little infant food, Mellin's, or Benger's, by preference. Put a teaspoonful in a saucepan with some milk and boil for five minutes. Add the thickened compound to the bottle contents. From the tenth to the twelfth month wean the baby from the breast or bottle.

Food for Poor Children.—Poor mothers are unable to make the mixture we advocate, or to buy a Soxhlet's sterilizer, and many of your patients will be of the poorer classes.

You can get them a bottle of citrate of soda, and they can buy some Demerara sugar and cod-liver oil. They can then make the following milk mixture :—

Milk	3 oz.
Barley Water or Lime Water	3 oz.
Demerara Sugar	1 smoothed teaspoonful.
Citrate of Soda	A pinch.
Cod-liver Oil (to add fat). if needed (p. 269)	5 drops to be added after sterilization.

The baby is fed on this mixture in the same way as on the more elaborate mixture. For the first two days, use it diluted with three parts of water. For **STERILIZATION**, put the mixture into an ordinary bottle, and put the bottle into a saucepan of cold water. Then boil the water in the saucepan for ten to fifteen minutes. If this cannot be managed, put the feed in a small saucepan, raise it quickly to boiling point, and let it cool rapidly by putting the saucepan in cold water. Keep the mixture in a clean, corked bottle, put to stand in cold water.

Keeping the Bottles and Nipples Clean.—This is a very important part of baby feeding ; as important, almost, as the cleanliness you observe in the conduction of labour. Milk is a good food for microbes, and some of these microbes are so poisonous that they will kill a healthy baby in twenty-four hours. The remnants of milk about the

nipple, or in the bottle, will feed countless microbes, which will poison the child. There is no more common cause of infantile illness than this.

The bottles should be boat-shaped, unless the Soxhlet's bottles are used. They must never have rubber tubing. It is better to have two bottles, but one will do. Scald them inside and out, or boil them before and after feeds, and keep them in a solution of soda. Scrub the nipples with soap and water and a brush, turning them inside out before and after each feed. Boil them once a day and keep them in soda solution.

Position of the Baby whilst Feeding.—Let the baby be supported on the arm, the nurse being seated. The baby, as previously stated, must not have the bottle in its cot.

Mixed Feeding.—If a baby does not gain in weight on breast feeding alone, give the bottle once a day and also for the night feed. A little Mellin's or Benger's food can be added, provided the baby is over three months old.

WEANING.—Wean the baby about the tenth or twelfth month and feed it with a spoon. If breast fed, and its weight is stationary, wean before this. Begin by giving the baby one spoon feed of whole milk once a day. If the child keeps well, give it alternate breast and spoon feeds. Sometimes it is convenient to give the bottle instead of spoon feeds, and the baby is weaned from the bottle at fifteen months. At a year old the baby should no longer have the breast, weaning thus taking a month to two months.

Do not wean a breast-fed baby in hot weather, when diarrhoea is prevalent.

There is no need to wean the baby if the monthly periods start during lactation. The food and care of babies after weaning is dealt with in books on general nursing.

GENERAL CONDITIONS OF A BABY'S WELFARE

Fresh Air.—Fresh air is very important to the health of a baby. You are advised at the Rotunda to take the baby

out in the fresh air after the first day, unless rain is falling or the air is damp, or very cold. The sooner, too, that it is put in a perambulator the better. It will get more fresh air, because it is less tedious for a nurse to wheel a perambulator than to carry the baby. It is good to keep the baby in its cot out in the sun all day, except at meal-times. If the child is well wrapped up in cold weather, it will not catch cold. It should lie on its back, for this is the natural position.

The nursery windows should be open day and night, winter and summer. You may close them when the baby has its bath, although babies do not catch cold when the window is open.

The Bath.—For fear of the cord being wetted, use only a shallow bath until the cord has separated. Soap after the first bath should not be used with a very young baby. Rubbing with a towel is too severe for a baby's delicate skin. It should be dabbed with the towel to dry it. After this powder the groins, buttocks, arm-pits and neck with a dusting powder, such as boracic acid one part, zinc oxide, three parts, starch, six parts.

When the cord has separated, which it does by drying up between the fifth to tenth days, the baby has a bath morning and evening. The temperature of the water should be warm, about 90° F., or nicely warm to your bare elbow. Never immerse the baby's head, but hold its head with the left hand.

Care of Eyes and Mouth.—In a healthy baby the eyes should be sponged with cotton-wool wipes and warm water, night and morning. They may be a little red the first two days from the silver nitrate (p. 130). The mouth should be cleansed with soft linen and warm water three times a day. Wrap the linen round your little finger and so wipe out the mouth.

Care of the Cord.—The cord is dressed daily in the manner described on p. 131. By keeping the cord dry, separation is best effected. Sometimes a small weeping surface is left. Treat this with zinc ointment or boracic powder. Absolute cleanliness in the treatment of the cord is essential.

Care of the Foreskin in a Male Child.—The foreskin should be pulled back a little day by day. In a few days you will be able to completely retract it. From that time on, when the baby is bathed, show the mother how to draw it back and wash the surface it covers. If the foreskin will not go back after ten days, the condition is known as *phimosis* (*phimosis*—Greek, to contract) and requires circumcision.

Sleeping.—It is by far the better plan to keep the baby in a separate cot, basket or box, except at meal-times. If the child is nursed to sleep in the mother's bed, it will get accustomed to this soporific nursing and cry and be wakeful without it. Above all, do not let curious visitors be constantly handling the child and spoiling its sleep. Let it be put back to the cot immediately after a feed. Jiggling a baby after its feed is very harmful. You need not have the room in which the baby sleeps especially warmed. The ordinary temperatures that suit adults suit the baby just as well. It should sleep with its face exposed and not covered by a blanket, or thick veil, when in its perambulator.

Clothing.—The principal fault in the clothing of babies is that it is too thick. You can tell when the clothing is too thick by the sweating of the baby. The forehead is moist and the baby is often fretful. *Nor should the clothing impede the movements of the child, nor be tight round its chest and abdomen.* Sometimes one finds an unfortunate baby imprisoned in its clothing as in a strait-jacket. It must be able to kick freely and move its arms, for exercise is important to the baby's progress.

Crying.—A healthy baby does not always cry because it is hungry. It may be thirsty. Giving it two or three teaspoonfuls of cold water will quickly decide the point. If this does not stop its crying, it may be hot, or its feet may be cold; its napkin may be wet or soiled; a pin may be running into it; a flea may be biting it, or it may be fretful from too much attention when it wants to sleep. A change of position in the cot will often stop the crying. If it continues to cry, remember that continuous crying is one of the chief signs that a child is not well.

The Napkins.—The napkins should be changed as soon as wetted or soiled. Otherwise the skin of the buttocks will get raw and red.

Grape Juice and Orange Juice.—The juice of fresh grapes, one teaspoonful a day to a baby of over a month, or orange juice, one to two teaspoonfuls to a baby over three months, can be given, and are especially advisable if the baby has a tendency to confined bowels.

Comforters.—Have nothing to do with comforters. They are dirty things, and, like all dirty things, bad for the baby. A baby will not miss something it has never had.

Care of Premature Children.—These should be under the care of a medical man. Premature children are apt to do well for a week or so and then die suddenly. They require to be kept warm in gamgee tissue, or an incubator to imitate the heat of the uterus. They therefore perspire and so lose fluid, as well as by passing urine and fæces. The stomach is very small, and they may take half an hour to swallow a teaspoonful of fluid. Hence the Rotunda rule is to give water by enemas, as well as by the mouth. The hospital routine is—

First day.—Water by mouth. One to two teaspoonfuls of pepsencia whey ; three to four enemas, each of one tablespoonful of normal saline (one teaspoonful common salt to the pint of water).

Second day. Four meals of pepsencia whey. Enemas as before.

Third day.—Pepsencia whey, unless breast milk is established. If the baby is too weak to suck, draw off the milk with a breast pump and give it to the child by a teaspoon. Enemas as before.

From the fourth day.—Give two enemas of two tablespoonfuls each, until the baby is taking the breast well. The milk flow should by now be well established. If not, give the milk mixture, but dilute it at first with equal parts of water. Give the enemas slowly through a funnel and No. 6 soft rubber catheter.

How to make Pepsencia Whey.—Put a saltspoonful of pepsencia to three ounces of milk at 100° F. Wait for

about five minutes, then break up the curd and strain off the whey.

GENERAL INFORMATION ABOUT THE NORMAL BABY

AT SIX WEEKS a baby begins to observe and hear. If a child turns at a sound, it is not deaf and will not be dumb.

AT THREE MONTHS a baby holds up its head.

AT SIX TO EIGHT MONTHS the two lower central teeth appear. The upper central teeth appear between the ninth and twelfth months.

AT EIGHT MONTHS a baby should be trained to go without napkins. They should at first be removed for several hours and then replaced. The baby will get accustomed to regular habits in this way.

AT TWELVE MONTHS the baby begins to walk.

AT EIGHTEEN MONTHS the baby begins to talk.

CHAPTER XXVI

THE UNHEALTHY BABY

The Unhealthy Baby.—Frequently the baby is so obviously ill, that you have no hesitation in recommending a doctor. At other times the signs are indefinite, they may hardly awaken your suspicions. The responsibility of its welfare rests on your shoulders, if you are not acting with a doctor, and you will feel easier if you have some definite measure by which you are able to test the baby's fitness and the suitability of the method in which it is being reared. This measure you have in a careful record of the weight of the baby. You will, I think, be wise to buy a pair of baby scales. The baby could be brought to your house to be weighed.

How to judge of the Progress of a Child by weighing it.—A healthy baby increases in weight about 7 ounces a week for the first three months of its life. This increase is best exhibited by breast-fed babies. The progress in weight is often irregular, but in three weeks you will expect to find an increase of some 15 to 20 ounces. If you do not, your suspicions that the baby is not perfectly healthy are aroused. A baby of 7 lb. at birth averages 12 to 13 lb. in weight at three months, 14 to 16 lb. at six months and 20 lb. at twelve months.

How often should a Baby be weighed?—A baby should be weighed once a week for the first three months of its life and less frequently later. Remember to weigh it at the same time of day and not one week before and another week after a meal. If it is clothed when you weigh it, let the clothes be the same on each occasion.

Gain in Weight in Babies fed by the Bottle.—Bottle-fed babies sometimes gain very little in weight for the first month. Provided the baby shows some increase in weight, you can be satisfied in this first month.

Significance of the Weight of a Baby.—As has been said, the weight of a baby is the best test of its progress. If some of the characteristics of a healthy baby are absent, if, for example, it cries frequently or seems to have colic, or is constipated, and yet week by week it gains in weight, you need not be anxious about the nature of the food it is getting, though you can pay attention to the quantity and other details that promote good health.

It is, indeed, a cardinal rule of baby feeding not to change the nature of the baby's food, unless there is definite evidence that it is losing, or not gaining, weight. Every change in diet involves the risk of a few days nutritive disturbance whilst the baby is getting accustomed to the new food. If it is not gaining weight, it must be classed as an unhealthy baby, and most probably will have other signs of ill-health, and will not fit the description of the healthy baby on p. 262. In the majority of these cases, the baby should come under the care of a medical man. It will, however, be of value to you to know something about the various reasons why a baby is unhealthy, and about the treatment of these conditions.

REASONS OF ILL HEALTH IN A BABY

A. Reasons Connected with Feeding.

1. The food may be too strong.
2. The food may be too weak.
3. The food may be unsuitably given.
4. The baby may not be able to suck properly.
5. The baby may not get enough fluid.
6. The food may be unsuitable.
7. Accompanying these, the baby may have colic, vomiting, diarrhoea, or constipation.

B. Other Reasons.

8. The baby may be kept too hot in stuffy rooms, and not allowed to have sufficient fresh air and exercise.

9. The baby may have some general disease.

1. The Food may be too Strong.—When too strong, the baby will be sick after its meals, vomiting up the contents of its stomach, not merely possetting the extra quantity it does not require. It will also probably have colic, evidenced by screaming, drawing up its legs, and hardening its abdomen. It is in the stools you find most definite signs. You find white curds, or the stools are whitish from curds. This, unaccompanied by other signs, does not matter, if the child is being fed on whole milk (p. 272).

These signs of too strong food occur almost exclusively in bottle-fed children, and you must watch for them with especial care when the baby is first given the bottle.

Treatment.—Dilute the 6 ounces of mixture with 3 or even 6 ounces of water. Use lime water in preference to barley water. Try feeds every two and a half hours instead of every two hours.

If these measures fail to benefit the baby in a few days, call in a medical man.

2. The Food may be too Weak.—The breast milk may be too weak for a baby on rare occasions. It is unlikely that the mixtures will prove so.

The baby does not gain properly in weight. It whines and cries with hunger. It does not fall contentedly to sleep after a meal. It will be constipated.

Treatment.—A hungry baby may be fed twice at night, at 1 a.m. and 4 a.m. A breast-fed baby may have to be weaned or mixed feeding tried, but in these cases you should consult a doctor.

3. The Food may be Unsuitably Given.—Irregularity in the times of feeding is an exceedingly common cause, perhaps the commonest cause of interference in a baby's proper progress. Some mothers give the baby the breast whenever it cries. The food stops the baby crying for a time, but gives it indigestion, then more crying, more food, more indigestion, and so on. Visitors who jig or disturb the baby after food must be forbidden. Cleanliness in the giving of food is essential. Lastly, do not let the

baby suck too fast. If greedy, take it from the breast for a minute or two during feeding, or let the mother pinch below the nipple to prevent a too rapid flow of milk.

4. The Baby may not be able to Suck Properly.—The causes which prevent a baby from sucking are : 1, depressed nipples ; 2, the jamming of the baby's nose against the breast ; 3, bad hare lip ; 4, cleft palate ; 5, tongue tie ; 6, prematurity ; 7, too small a hole in the rubber nipple ; 8, weakness from illness.

TRUE TONGUE TIE is rare. The tongue is bound down to the floor of the mouth and the tip cannot be protruded between the lips. The freeing of tongue tie must be done by a doctor.

CLEFT PALATE is a cleft along the centre of the roof of the mouth which separates the mouth from the nose. Milk sucked into the mouth will pass into the nose instead of into the throat. Bad harelip is often associated with cleft palate. Such babies have to be fed by the spoon or with a glass pipette, but a doctor's advice must be sought in all cases of harelip and cleft palate.

5. The Baby may not get enough Fluid.—The urine stains the napkin when the baby does not have enough fluid. Ordinarily it does not do so. The baby is constipated with hard dry stools. It cries, and the crying is stopped and the baby cured by giving as many teaspoonfuls of cold water as it will take between meals.

6. The Food may be Unsuitable.—The baby does not increase in weight as it should do. It may have vomiting, constipation, colic or diarrhœa, signs to which special attention will be paid in the next paragraph. You judge whether the food is too strong, too weak, or unsuitably given, yet the changes you effect in the baby's regimen do not make it put on weight. The diet is unsuitable.

Treatment.—You should consult a doctor in such cases.

At the same time I think it an advantage for you, and also for the mothers over whom you have influence, that you should know as much as possible about babies and their diets. Only do not misapply your knowledge. Remember a baby's organism must have judicious

supervision, and the skill and knowledge of the greatest physicians are sometimes at fault. Therefore do not presume to treat babies which really seem to you definitely ill or backward.

Constituents of the Diet over which the Doctor has Control.—**THE DILUENT.**—Barley water does not always suit babies. If a baby has wind, colic, or vomiting, it is often well to try lime water in place of barley water.

Rice water can be used when there is any looseness of the bowels, and oatmeal water when there is a tendency to constipation. They are made in the same way as barley water. Finally plain water is often a successful diluent.

THE FAT.—Fat in excess affects a baby just as it does an adult. It takes away its appetite, often makes it sick, and gives it slimy stools, on which whitish smears of undigested fat may be actually seen.

The fat can be decreased by not adding cream. Skimmed milk and whey have much less fat than ordinary milk, and can be used temporarily.

If a bottle-fed baby is not increasing in weight but otherwise is not ill, it may improve with more fat. Cod-liver oil is a good way of giving fat. Five drops may be added to each feed.

SUGAR.—Plenty of sugar may sometimes make a baby fat like the babies of proprietary food advertisements, but such babies, though fat, are not as hardy as normal babies. Too much sugar gives the baby signs of indigestion. It may make it vomit. Flatulence with or without colic is another sign of too much sugar or starch, and flatulence is more likely to occur if the baby is constipated.

The sugar can be decreased by adding less sugar to the feeds.

CASEIN, OR CURD.—The curd is the constituent of cow's milk which is the most troublesome to a baby's digestion.

Too much casein is shown chiefly by colic and curd in the stools or whitish bulky stools. Remember that when fed on whole milk, the baby may pass these big stools without any loss to its health.

The simplest way of decreasing the amount of casein is to increase the diluent, as described under food that is too strong.

If the doctor is not satisfied, he will put the baby on : 1, some form of whey, or whey and milk mixture ; 2, condensed milk ; 3, peptonized milk.

1. Whey, or Whey and Milk Mixtures.—WHEY IS PREPARED in the manner described on p. 278 or by adding a teaspoonful of rennet to a pint of milk, warming to 100° F. for about fifteen minutes, then raising the temperature to 160° F. to stop the action of the rennet, cooling quickly, breaking up the curd, and straining off the whey through muslin.

Whey contains less than 1 per cent. of proteid compared to the 2 per cent. to 3 per cent. of ordinary milk. The whey takes the place of milk in the mixtures, and milk is gradually substituted for it as the baby improves.

2. Condensed Milk.—Poor mothers cannot make whey mixtures. The casein of condensed milk is more digestible than that of ordinary cow's milk. Nestlé's is the milk that is easiest to get, and is often useful. It is deficient in fat, so cod-liver oil must be given with it, and it has too much sugar. But it has the advantage, an advantage of great importance in hot weather when diarrhoea is prevalent, of being free of microbes, for it is sterilized in its preparation.

It must be well diluted, one full teaspoonful of Nestlé to ten of water at first.

Peptonized Milk.—Peptonized milk succeeds sometimes where the doctor fails to get improvement on other foods.

TO PEPTONIZE MILK, take half a pint of milk, add a pinch of sodium bicarbonate to it and a Fairchild's powder. Stir them, and keep the mixture for twenty minutes at a temperature of 110° F. Raise quickly to the boiling point to stop the action of the powder, else the milk will be bitter, then cool the milk.

Patent Foods.—Patent foods should never be given to unhealthy babies without the doctor's orders. The directions for giving them are on the packages.

BEEF JUICE is sometimes of value to unhealthy babies. It is made by taking so many ounces of raw beef, mincing it, soaking it with the same number of ounces of water and squeezing the product through fine muslin.

EGG WATER, OR ALBUMEN WATER, may be wanted. It is made by adding the white of a raw egg to half a pint of water and stirring.

Colic, Vomiting, Diarrhœa, Constipation.—These conditions are nearly always due to the errors of diet and of its administration.

Colic.—When a child has colic, it screams suddenly, hardens its stomach, and draws its legs up.

Treatment.—The food alterations have been given, if the colic is accompanied by loss of weight or ill health. Hot flannels to the stomach relieve the pain. Dill water is a favourite remedy. See that the child is warm in its coverings; cold feet and colic go together. Lessen the amount of food temporarily and give the baby a teaspoonful of castor oil. If the baby does not get well, consult a doctor.

Vomiting.—If the child vomits, lessen the amount of food for a day or two, and decrease the amount of fat and sugar.

If vomiting is violent, send for a doctor. The baby may be food poisoned by milk in which dangerous microbes are flourishing.

Diarrhœa. GREEN STOOLS. RED BUTTOCKS. THRUSH.—You must look upon diarrhœa in any form as a serious disease in children, and an especially dangerous disease in hot weather. Diarrhœa from food poisoning may kill a healthy baby in a few hours.

The stools in diarrhœa are often bright green, and the buttocks red. In fact, thrush, green stools, and red buttocks constantly go together.

Treatment.—Give the baby a dose of castor oil, stop all food, give water only, and send for the doctor.

THE RED BUTTOCKS you treat by strict cleanliness; removal of the napkins as soon as soiled, and washing the buttocks with cold water. Plenty of powder is needed. Zinc ointment, thickly spread, keeps the red buttocks from

being wet. The real cure for red buttocks is the curing of the diarrhœa.

THRUSH.—Thrush is a disease of the mouth that results from a dirty nipple or bottle, or the much treasured, but frequently filthy, comforter. The tongue and cheeks are covered with white patches, looking like remnants of milk, but you find you cannot rub them off with a piece of soft linen. The mouth is dry. Green stools usually accompany thrush.

Treatment.—You can readily cure it by wiping the mouth out with soft linen soaked in glycerine and borax three times a day, and cleaning the mouth with linen and warm water after every meal.

Constipation.—Constipation is frequent in breast-fed babies, and does not in any way affect their health. In bottle-fed babies it is less common, and due to too weak food or too little fluid.

Treatment.—In breast-fed babies give teaspoonfuls of hot water, and ten drops of cod-liver oil, three times a day. Give fresh grape or orange juice (p. 278). In breast or bottle-fed babies massage is good. Lubricate your hand with sweet oil and rub round the baby's abdomen in the direction of the hands of the clock for a few minutes night and morning.

You must not give medicine for constant constipation, but consult a doctor. Castor oil is not a good drug for constant constipation.

The Baby may be kept in Hot, Stuffy Rooms, and not allowed enough Fresh Air and Exercise.—These points are only repeated for the sake of emphasizing their importance.

The Baby may have some General Disease.—These diseases, of course, need a doctor. They do not, as a rule, interfere suddenly with the baby's health. You find something is wrong, the baby is unhealthy, and you report to a doctor.

The consideration of these diseases in brief, with birth injuries and malformations, will be taken in the next three sections.

DISEASES THAT APPEAR SHORTLY AFTER BIRTH

Marasmus.—Marasmus (*marasmus*—Greek, growing lean) is a disease in which, in spite of all change of diet and every medical attention, babies continue to waste. They are essentially cases in which a good wet nurse is valuable.

Congenital Syphilis.—This is a disease which babies get from their parents. It may actually show itself at birth, the baby being a miserable, wizened object from birth. More frequently the disease develops within the first month.

The signs, which you should remember, so as not to delay the essential treatment by a medical man, are blebs on the palms and soles, a wizened, old man face, a rash on the body, a mop of coarse dark hair, sores around the mouth, and snuffles like a heavy cold.

If you detect any of these signs in a baby, consult a medical man.

Congenital Heart Disease.—Some babies are born into the world with diseased or malformed hearts. Such babies are often blue, and are always feeble. The Central Midwives Board tells you to send for a doctor when the baby shows “dangerous feebleness.” This is one of the common causes of such feebleness.

Mastitis.—The breasts of a newborn baby may swell and even secrete a little milk. If you rub them, an abscess may form, but if you protect them with pads of wool, they will get well.

Red Gum, or Strophulus.—Red gum consists of little red pimples crowned by a tiny bleb or yellow crust. They break out when a baby is too hot, for example, on the cheek that rests against the breast of the mother, if the baby is in bed with her. They are more common when the baby has indigestion.

Treatment.—Keep the baby cooler and use a dusting powder. Attend to any slight disturbance of digestion.

Jaundice.—Slight jaundice, or yellowing of the skin, is common about the third day and need not worry you, for it passes away in a day or two.

A deeper and more persistent jaundice is rare and serious, and must be reported to a doctor.

Sepsis of the Umbilical Cord.—In spite of every care in dressing, the withering umbilical cord may form a food for dangerous microbes. Either an unhealthy cord, with red inflammation of the neighbouring skin occurs, or acute blood poisoning leading quickly to death. The septic cord may bleed, and the bleeding be impossible to stop.

On the first suspicion of such infection, inform a medical man.

Hæmorrhage from the Cord.—The cord may bleed owing to : 1, sepsis, 2, because your ligature is loose ; or 3, the baby is what is known as a “bleeder,” a disease that runs in families. Bleeding from the cord is very serious.

Treatment.—Tie the cord again lower down. If the bleeding starts again, press a firm pad of cotton-wool on the cord and summon the doctor.

Melæna.—Melæna (*melas*—Greek, black) is the passing of dark blood by the back passage. Sometimes the baby sucks the mother's blood from a cracked nipple and may vomit it or pass it by the back passage. More frequently it is due to more ominous causes, such as the baby being a “bleeder.”

Melæna is a very serious sign, so always send for a doctor.

Convulsions.—Babies are far more apt to have convulsions than adults. The causes of convulsions in a baby are many. Sometimes some serious brain disease is the cause. By far the most common cause is some digestive disturbance, as, for example, that resulting in green stools.

The baby twitches, stiffens, and becomes a livid colour. The eyes turn outwards. You could, in fact, scarcely mistake a convulsion.

Treatment.—Send for a medical man. In the meantime, put the baby in a hot bath (100° F.), take a handkerchief wrung out in cold water and lay it on the baby's head. When the baby seems better, dry the child. If it seems very weak, give it ten drops of brandy. Babies may die in the first convulsion, but seldom do. When due to

indigestion, the curing of the complaint cures the convulsions.

Ophthalmia Neonatorum.—Ophthalmia (*ophthalmos*—Greek, eye) neonatorum (*neos*—Greek, new; *natus*—Latin, born) is the term given to inflammation of the baby's eyes. This ophthalmia, occurring soon after birth, is the principal cause of blindness in the unfortunate people who are said to have been born blind or be blind from birth. You cannot overrate its seriousness.

Causes.—These are infection of the eyes of the child during the second stage of labour by yellow vaginal discharge, or sometimes the transference of the same at a later date to the baby's eyes by the mother's fingers.

Signs.—The signs are redness of the eyes and gumminess of the lids. They begin, as a rule, on the third day. On the first two days you may get a little redness and gumminess of the lids from the silver nitrate which you dropped into the eyes to prevent this terrible disease (p. 130). But in ophthalmia neonatorum the redness quickly increases, the eyelids swell, and, when you separate them, yellow matter wells out.

Treatment.—Proper dropping in of silver nitrate solution into the eye is of the utmost importance in staving off this disease.

When established *prompt medical treatment* saves the majority of affected children's sight. It consists of constant bathing of the child's eyes and other details.

The doctor will probably expect you to bathe the child's eyes, and there are one or two points to remember. The first point is that when you open the child's lids the pus may squirt out. If it squirts into your own eyes, you will get the dread disease yourself. So keep your face out of danger, or wear goggles. The second is that the pus on your fingers, on wipes, etc., if carried to the eyes produces the disease. Therefore wash your hands carefully after attending the baby, and then hold them in some disinfectant solution, such as corrosive sublimate. Burn all the wipes after use. Warn the mother and others who are near the child of the infectious nature of the pus. Thirdly, get clear instruc-

tions as to the bathing and care of the child's eyes from the doctor. Lastly, you should consult the doctor before attending healthy women at their confinements, or other babies, and ask him what you should do to avoid carrying the infection.

BIRTH INJURIES

Cephal-hæmatoma.—The term cephal-hæmatoma is from the Greek words *kephalee*, the head; *haima*, blood; and *oma*, swelling. The condition is a blood swelling of the baby's head, and occurs during some difficult labours. It resembles a caput succedaneum, but differs in two particulars: first, it never forms over a suture, which a caput may do; and, secondly, it takes many days to disappear, whereas a caput will be gone in a few hours. Let a cephal-hæmatoma alone.

Hæmatoma of the Sterno-Mastoid.—A similar swelling may appear in the side of the neck in a muscle called the sterno-mastoid. It too, will go away, but a doctor should be called to see the child.

Paralyses and Fractures.—After a difficult labour, paralyses may occur. During such difficult labour, a doctor will have to be present to effect delivery, and it will devolve upon him to detect and treat fractures, but paralysis of the face, arm and legs, may not be evident at once.

Paralysis of the face, as a rule, soon gets well. Paralysis of the arm and legs are more serious. In any case, inform a medical man, if you suspect paralysis.

MALFORMATIONS

With tongue tie, cleft palate, harelip (p. 283) imperforate anus or urethra (p. 263), I have already dealt.

Babies are sometimes born with unnatural swellings of, or protrusions from, the head, or in the centre of the lower part of the spine, such babies need medical attention.

Club Foot.—Club foot, or distorted feet, you will recognize at sight, but make a point of always examining the child's feet. Movements to put the feet straight should be

begun at once on the day of the baby's birth, and under the direction of a medical man.

Umbilical or Groin Herniæ.—The bowel may protrude under the skin at the baby's navel, or in the groin. Such protrusion is known as a rupture, or hernia. You can see the swelling, and notice that it is larger and more tense when the child cries.

The treatment must be in the hands of a medical man.

CONCLUSION

We have now considered the subject of midwifery from the midwives' point of view. As a last word, I wish to strongly advise you not to be content with knowing what is written in this book simply as book knowledge. The way to learn is to read and observe at the same time. Take every opportunity in your training of assuring yourself by observation of your cases that what you read is true. You will thus acquire through rightly based experience both skill and confidence. With confidence you will lose fear, and you will find that knowledge that gives you real power in your work, will also give you pleasure.

On the other hand, avoid over-confidence. Remember the aphorism that to know that you do not know is one of the first principles of knowledge. If you do not remember to act on this, you will fail in one of your chief duties, namely to be an intelligent go-between your patient and a doctor in cases of danger. Co-operation between yourself and a medical practitioner adds greatly to the safety of the mothers you attend. You will, I think, always find doctors willing to help you and you need never hesitate to seek advice from them, when you find the case is beyond your powers.

Finally, remember that of all your duties to your patient none is more important than cleanliness. Armies are organized to protect nations from their enemies. You belong to a greater army, whose principal duty is to protect the highest of organized beings, namely mankind, from the lowest of organized beings, the disease-causing microbes, and its chief weapon is cleanliness. At present the national and international organization

of the profession is only in embryo. The rules and regulations of the Central Midwives Board are amongst the first attempts at organization for the greater efficiency of the profession to which you belong. Yet the success which attends the abolition of the diseases caused by microbes to women at the time of childbirth depends on the care with which each individual midwife respects the ritual of cleanliness. Habits of surgical cleanliness, co-operation with medical practitioners in difficult cases, hard study and careful observation, especially during the invaluable months of your training, will make you efficient guardians of the health of mothers and the welfare of their babies.

APPENDIX

B.—REGULATING THE ISSUE OF CERTIFICATES AND THE CONDITIONS OF ADMISSION TO THE ROLL OF MIDWIVES.

1. Candidates must satisfy the Central Midwives Board that they have reached a sufficient standard of general education, and submit the following documents duly filled in and signed :—

(a) A certificate of birth, or of baptism, or a statutory declaration made by a competent person, showing that the candidate is not under twenty-one years of age, and, where the candidate has been married, the certificate of marriage also ;

(b) Certificates to the effect that the candidate has undergone the training set forth in *C* 1 (1) (2) and (3) ;

(c) A certificate of good moral character. This certificate must be in the form prescribed by the Central Midwives Board, and must be signed by two persons of position acceptable to the Board. Each person signing must state in the certificate that he or she has known the candidate for at least twelve months, and must append to his or her signature a statement of his or her calling or position and postal address. (Schedule, Form 1.)

2. Candidates must pass an examination as hereinafter set forth. (See *C* below.)

3. A candidate who has complied with the above requirements and has successfully passed the examination shall receive a certificate in the form set out in the Schedule, and her name shall be entered by the Secretary on the Roll of Midwives. (Schedule, Form II.)

4. The names of all women admitted to the Roll of Midwives under Section 6 (1) and (2) of the Midwives Act shall be printed in one single list and in alphabetical order.

C.—REGULATING THE COURSE OF TRAINING AND THE CONDUCT OF EXAMINATIONS, AND THE REMUNERATION OF THE EXAMINERS.

1. No person shall be admitted to an examination unless she produces certificates that she has undergone the following course of training, viz :—

(1) She must have, under supervision satisfactory to the Central Midwives Board, attended and watched the progress of not fewer than twenty labours, making abdominal and vaginal examinations during the course of labour and personally delivering the patient. (Schedule, Form III.)

(2) She must have, to the satisfaction of the person certifying, nursed twenty lying-in women during the ten days following labour. (Schedule, Form IV.)

The certificates as to (1) and (2) must be in the form prescribed by the Central Midwives Board, and must be filled up and signed either by a registered medical practitioner or by the Chief Midwife, or, in the absence of such an officer, by the matron of an institution recognized by the Board, or, in the case of a poor law institution, by the matron, being a Midwife certified under the Midwives Act, or a superintendent nurse, certified in like manner and appointed under the Nursing in Workhouses Order 1897 and attached to such institution, or by a Midwife certified under the Midwives Act and approved by the Board for the purpose.

(3) She must have attended a sufficient course of instruction in the subjects named below. (*See Rule C 4.*)

No period of less than three months shall be deemed sufficient for the purpose.

The above Certificate (3) must be in the form prescribed by the Central Midwives Board, and must be filled up and signed by a registered medical practitioner recognized by the Board as a teacher. (Schedule, Form V.)

2. Candidates who intend to present themselves for examination must send notice to the Secretary of the Central Midwives Board at least three weeks before the date fixed for the examination to commence, accompanied by the certificates mentioned

3 1 and C 1, and by the fee of one guinea; or, in the event of a candidate having presented herself on a former occasion having failed to pass, the fee of fifteen shillings. In the case of a candidate being prevented by illness from attending

or completing her examination after having paid the fee and having been accepted as eligible, she shall be admitted to a subsequent examination on payment of a fee of ten shillings and sixpence. In order to avail herself of this provision the candidate must produce a medical certificate satisfactory to the Board.

3. Any candidate who during the examination shows a want of acquaintance with the ordinary subjects of elementary education may be rejected on that ground alone. (See Schedule, Form V.)

4. The examination shall be partly oral and practical, and partly written, and shall embrace the following subjects:—

(a) The elementary anatomy of the female pelvis and generative organs.

(b) Pregnancy and its principal complications, including abortion.

(c) The symptoms, mechanism, course and management of natural labour.

(d) The signs that a labour is abnormal.

(e) Hæmorrhage : its varieties and the treatment of each.

(f) Antiseptics in Midwifery and the way to prepare and use them.

(g) The management of the puerperal patient, including the use of the clinical thermometer and of the catheter.

(h) The management, including the feeding, of infants, and the signs of the diseases which may develop during the first ten days.

(i) The duties of the Midwife as described in the regulations.

(j) Obstetric emergencies, and how the Midwife should deal with them until the arrival of a doctor. This will include some knowledge of the drugs commonly needed in such cases, and of the mode of their administration. (See *E* 17.)

(k) Puerperal fevers, their nature, causes and symptoms.

(l) The disinfection of person, clothing, and appliances.

(m) The principles of hygiene as regards the home, food supply, and person.

(n) The care of children born apparently lifeless.

5. Due public notice shall be given of the examinations to be held under the Act.

6. The remuneration of the examiners shall be such as may from time to time be recommended by the Central Midwives Board and approved by the Privy Council.

D.—RULES OF PROCEDURE ON THE REMOVAL OF
A NAME FROM THE ROLL, AND ON THE
RESTORATION TO THE ROLL OF A NAME
REMOVED.

REMOVAL OF A NAME FROM THE ROLL.

1. When it is reported to, or otherwise brought to the attention of, the Central Midwives Board that a midwife has been convicted of a felony, misdemeanour, or offence, or has been guilty of wilfully disobeying the rules and regulations laid down under the Midwives Act 1902, or of other misconduct, the Secretary shall, when investigation by the Local Supervising Authority is required, forthwith communicate such report or information to the Local Supervising Authority of the area within which the midwife resides, or of that in which the felony, misdemeanour, offence, act of disobedience of the rules and regulations, or other misconduct is alleged to have been committed (as the case may be), and ask such Authority to investigate the matter, and to report whether or not, in their opinion, a *prima facie* case of malpractice, negligence, or misconduct has been established against the midwife. Any report by a Local Supervising Authority shall, as soon as may be after its receipt by the Secretary, be laid, with all other information relating to the case to which it refers, before a Committee of the Board to be called the Penal Cases Committee, who shall report thereon to the Board, and upon such report the Board shall proceed to consider whether such a case has in their opinion been made out as to require an answer from the accused person.

2. If within a reasonable time after the making of a request for investigation of any case no report has been received from the Local Supervising Authority, the Committee shall report to the Board on the case without further delay, or after such special investigation by a Solicitor to be appointed by the Board as they may think necessary. The Committee may, if they think fit, take the advice of the Solicitor at any time on a case before them, and may instruct the Solicitor to obtain proofs of evidence in support of the allegations against the accused person, either for consideration by the Committee, or to be laid before the Board with their report. The Committee may, if they think fit, before reporting on any case to the Board, ask the accused person for any explanation she may have to offer, and may consider such explanation and report thereon to the Board. If the Committee resolve that a case is one

upon which proceedings ought to be commenced for the removal of a name from the Roll and the cancelling of a certificate, the Secretary shall direct the Solicitor to take all necessary steps for verifying the evidence to be submitted to the Board, and for obtaining the necessary documents and the attendance of witnesses. Any answer, evidence, or statement forwarded, or application made, by the accused person between the date of the issue of the notice hereunder mentioned and the day named for the hearing of the case by the Board shall be dealt with by the Secretary, in consultation with the Solicitor, in such manner as he may think fit, or may be referred by him to the Committee. All statements in the nature of evidence proposed to be relied on as part of the case against the accused person, except proofs of convictions verified by the officer of a duly constituted Court, which cannot be laid before the Board by oral evidence, shall be verified by statutory declaration. A copy of any such statutory declaration or certificate of conviction shall be supplied free of cost to the accused person before the day fixed for the meeting of the Board to deal with the case, or for the adjournment thereof.

3. If the Board decide that such case has been made out, proceedings for the removal of a name from the Roll or the cancelling of a certificate, shall be commenced by the issue of a notice in writing, addressed to the accused person by the Secretary, on behalf of the Central Midwives Board. Such notice shall specify the nature and particulars of the charge alleged against the accused person, and shall inform her of the day on which the Board intend to deal with the case and decide upon the said charge. The notice shall further require the accused person to forward her certificate to the Secretary before or at the hearing of the case, to answer in writing the charges brought against her, and to attend before the Board on such day.

4. The notice, accompanied by a copy of these Rules, shall be sent by registered letter to the last-known address or the enrolled address of the accused person, and shall be so sent as to allow at least fourteen days between the day on which the notice is issued and the day appointed for the hearing of the case by the Board.

5. The case shall be heard at a special meeting of the Board, of which at least seven days' notice shall be sent by the Secretary to each member. The accused person may be represented or assisted by a friend, legal or otherwise.

6. At the hearing of the case the Secretary, or other person appointed by the Board for the purpose, shall first state to the Board the facts of the case and the charge alleged against the accused person, and shall then submit to the Board the evidence which he has received in support of the charge. The accused person, or her representative, shall be entitled to cross-examine any witness appearing against her on matters relevant to the charge.

7. When the evidence in support of the charge and a statement by or on behalf of the person making the charge are concluded, the accused person, or her representative, shall be invited by the Chairman to address the Board, and to tender evidence in answer to the charge.

8. If the accused person does not attend as required, either personally or by representative, the Board may proceed to hear and decide upon the charges in her absence.

9. Upon the conclusion of the whole case the Board shall deliberate thereon, and shall, after due consideration of all the relevant evidence on either side, whether oral or documentary, pronounce its decision either forthwith or at a subsequent meeting.

10. If the Board find the charges against the accused person to be proved, either in whole or in part, and the offence cannot, in its opinion, be adequately dealt with by censure and caution, the Board may direct the Secretary to remove the name of the accused person from the Roll of Midwives and to cancel her certificate.

11. Notice in writing, by registered letter, of the removal of the name from the Roll and of the cancelling of the certificate shall be sent by the Secretary to the person found guilty of the offence, and to the Local Supervising Authority of the district within which she resides.

RESTORATION TO THE ROLL OF A NAME REMOVED.

12. Application for restoration to the Roll shall be made in writing addressed to the Secretary of the Central Midwives Board, and signed by the applicant, stating the grounds on which application is made. In cases where the cancelled certificate has not already been returned to the Board, it must be sent in with the application, or a statutory declaration made of its previous loss or destruction.

13. The application must be accompanied by a statutory declaration made by the applicant, setting forth the facts of

the case and stating that, she is the person originally enrolled. The declaration shall be in the Form given in the Schedule (Form VI).

14. The statements in the application and declaration must also be supported by the certificates of at least two persons, being Justices of the Peace, Ministers of Religion, or registered Medical Practitioners, who were and are well acquainted with the applicant before and since the removal of her name. These certificates must each of them testify to the applicant's identity and present good character, and they shall be in the Form given in the Schedule (Form VII).

15. The application, when duly supported by the declaration and certificates as hereinbefore provided, shall be considered at a meeting of the Board, made special for the purpose, of which at least seven days' notice shall be sent by the Secretary to each member. The Board may adjourn the consideration to a future date, or require further evidence or explanations from the applicant.

16. After consideration of all the circumstances of the case, as submitted to them in accordance with the provisions of these Rules, the Board may, if they think fit, direct the Secretary to restore the name of the applicant to the Roll of Midwives, and to issue a new certificate to her, on payment of the fee of 10s.

17. A copy of these Rules and of the Forms prescribed in the Schedule shall be supplied by the Secretary to intending applicants on demand.

E.—REGULATING, SUPERVISING, AND RESTRICTING WITHIN DUE LIMITS THE PRACTICE OF MID- WIVES.

DIRECTIONS TO MIDWIVES CONCERNING THEIR PERSON, INSTRUMENTS, ETC. ; THEIR DUTIES TO PATIENT AND CHILD ; AND THEIR OBLIGATIONS WITH REGARD TO DISINFEC- TION, MEDICAL ASSISTANCE, AND NOTIFICATION.

Note.—When engaged to attend a labour the midwife should take an opportunity of visiting the patient in her own house to advise as to personal and general arrangements for the confinement.

1. The midwife must be scrupulously clean in every way, because the smallest particle of decomposing matter may set up puerperal fevers.

She must wear a dress of washable material, and over it a clean washable apron.

Note.—It is best to have the sleeves of the dress made so that the midwife can tuck them up well above the elbows.

A midwife who is attending any case which is septic or in which there are foul-smelling discharges must not go to another case without first changing her dress and thoroughly cleansing and disinfecting her hands and forearms and such appliances as she may have had occasion to use.

For list of appliances see 2 (a).

Note.—Unless the cleansing process be thoroughly carried out there will be, even after a healthy confinement, remains of blood, lochia, or liquor amnii on the fingers, and especially under the nails, which will there undergo decomposition, and so become dangerous to the next patient attended. The midwife must, therefore, keep her nails cut short, and preserve the skin of her hands as far as possible from chaps and other injuries.

2. When called to a confinement a midwife must take with her in a bag or basket furnished with a washable lining:—

(a) An appliance for giving vaginal injections, a different appliance for giving enemata, a catheter, a pair of scissors, a clinical thermometer, and a nail-brush.

The Local Supervising Authority may, in the case of untrained midwives, use its discretion with regard to insisting upon the carrying of a catheter and appliances for giving vaginal injections.

(b) An efficient antiseptic for disinfecting the hands, etc.

(c) An antiseptic for douching in special cases.

3. Before touching the genital organs or their neighbourhood the midwife must on each occasion disinfect her hands, and forearms.

4. All instruments and other appliances must be disinfected, preferably by boiling, before being brought into contact with the patient's generative organs.

*5. Whenever a midwife has been in attendance upon a patient suffering from puerperal fevers, or from any other illness supposed to be infectious, she must disinfect herself and all her instruments and other appliances, to the satisfaction of the Local Supervising Authority, and must have her clothing thoroughly disinfected before going to another labour. Unless otherwise directed by the Local Supervising Authority, all washable clothing should be boiled, and other clothing should be sent to be disinfected by the Local Sanitary Authority.

* See Rule 24.

DUTIES TO PATIENT.

6. A midwife in charge of a case of labour must not leave the patient without giving an address by which she can be found without delay ; and after the commencement of the Second Stage, she must stay with the woman until the expulsion of the placenta, and as long after as may be necessary. In cases where a doctor has been sent for on account of the labour being abnormal or of there being threatened danger (see Rule 18) she must await his arrival and faithfully carry out his instructions.

7. The midwife must wash the patient's external parts with soap and water, and then swab them with an antiseptic solution on the following occasions :

- (a) Before making the first internal examination ;
- (b) After the termination of labour ;
- (c) During the lying-in period, when washing is required ;
- (d) Before passing a catheter.

For this purpose the midwife must on no account use ordinary sponges or flannels, but material which can be boiled before use, such as linen, or burnt afterwards, such as cotton-wool.

8. No more internal examinations should be made than are absolutely necessary.

9. The midwife in charge must in all cases of labour examine the placenta and membranes before they are destroyed, and must satisfy herself that they are completely removed.

10. The midwife must remove soiled linen, blood, fæces, urine, and the placenta from the neighbourhood of the patient and from the lying-in room as soon as possible after the labour, and in every case before she leaves the patient's house.

*11. The midwife shall be responsible for the cleanliness, and should give full directions for securing the comfort and proper dieting, of the mother and child during the lying-in period, which shall be held, for the purpose of these regulations and in a normal case, to mean the time occupied by the labour and a period of ten days thereafter. (See Rule 19.)

12. A case of normal labour in these regulations shall mean a labour in which there are none of the conditions specified in Rule 19 below.

DUTIES TO CHILD.

13. In the case of a child being born apparently dead, the

* See Rule 24.

midwife should carry out the methods of resuscitation which have been taught her.

14. As soon as the child's head is born, and if possible before the eyes are opened, its eyelids should be carefully cleansed.

†15. On the birth of a child which is in danger of death, the midwife shall inform one of the parents of the child's condition.

GENERAL.

16. No midwife shall follow any occupation that is in its nature liable to be a source of infection, or shall (except under the circumstances hereinafter mentioned) undertake the duty of laying out the dead.

In no case must a midwife lay out the body of any patient on whom she has not been in attendance at the time of death, or a body upon which a post-mortem examination has been made.

A midwife will not transgress this rule if, at the discretion of the Local Supervising Authority, she—

(a) Prepares for burial the body of a lying-in-woman, a stillborn child, or an infant dying within ten days; or,

(b) Lays out a dead body in a case of non-infectious illness, provided that she is not attending a midwifery case at the time.

After laying out a dead body for burial she must undergo adequate cleansing and disinfection.

17. A midwife must note in her Register of Cases each occasion on which she is under the necessity of administering any drug other than a simple aperient, the dose, and the time and cause of its administration.

CONDITIONS IN WHICH MEDICAL HELP MUST BE SENT FOR.

*18. In all cases of abortion, of illness of the patient or child, or of any abnormality occurring during pregnancy, labour, or lying-in, a midwife must explain that the case is one in which the attendance of a registered medical practitioner is required, and must hand to the husband or the nearest relative or friend present the form of sending for medical help [see Rule 21 (a)], properly filled up and signed by her, in order that this may be immediately forwarded to the medical practitioner. If for

† It is highly desirable that the midwife should see that every birth occurring in her practice is notified to the Local Supervising Authority within 48 hours, together with the name and address of the parent.

* See Rule 24.

any reason the services of a registered medical practitioner be not available, the midwife must, if the case be one of emergency, remain with the patient and do her best for her until the registered medical practitioner arrives, or until the emergency is over.

After having complied with the Rule as to the summoning of medical assistance, the midwife will not incur any legal liability by remaining on duty and doing her best for her patient.

*19. The foregoing rule shall apply :—

(1) In all cases in which a woman during PREGNANCY, LABOUR OR LYING-IN appears to be dying or is dead.

PREGNANCY.

(2) In the case of a PREGNANT woman ;

(a) If the patient is a dwarf or deformed ;

(b) When there is loss of blood ;

(c) When there is any abnormality or complication.
such as—

Excessive sickness,

Puffiness of hands or face,

Dangerous varicose veins.

LABOUR.

(3) In the case of a woman in LABOUR at or near term, when there is any abnormality or complication, such as—

A malpresentation,

Presentation other than the uncomplicated head or breech,

Where no presentation can be made out,

Where there is excessive bleeding,

Where two hours after the birth of the child the placenta and membranes have not been completely expelled,

In serious cases of rupture of the perineum, or of other injuries of the soft parts.

LYING-IN.

(4) In the case of a LYING-IN woman, when there is any abnormality or complication, such as—

Abdominal swelling and tenderness,

Offensive lochia, if persistent,

Rigor, with raised temperature,

* See Rule 24.

Rise of temperature above 100·4° F., with quickening
of the pulse for more than twenty-four hours,
Unusual swelling of the breasts with local tenderness
or pain,
Secondary post-partum hæmorrhage,
White leg.

THE CHILD.

5. In the case of the CHILD, when there is any abnormality or complication, such as—
Injuries received during birth,
Any malformation or deformity in a child that seems likely to live,
Dangerous feebleness,
Inflammation of the eyes, however slight,
Serious skin eruptions,
Inflammation about the navel.

NOTIFICATION TO THE LOCAL SUPERVISING AUTHORITY.

20. (1) The midwife must send notice to the Local Supervising Authority, in accordance with Rule 21, in the following cases :—

**(a) Medical help.*—Whenever she has advised (Rule 18) that a registered medical practitioner should be sent for.

**(b) Deaths.*—In all cases in which the death of the mother or of the child occurs before the attendance of a registered medical practitioner.

**(c) Stillbirths.*—In all cases of stillbirth where a registered medical practitioner is not in attendance.

Note.—A child is deemed to be stillborn when after being completely born it has not breathed or shown any sign of life. (See Rule 13.)

(2) *Change of name or address.*—The midwife must immediately notify the Local Supervising Authority of any change of her name or address.

*21. For the purposes of the preceding rules the use of the following forms shall be compulsory :—

* See Rule 24.

(a) Form of sending for Medical Help.

No.....Date

This notice is sent on behalf of *

Address

I have advised that medical assistance be obtained on account of

SignedCertified Midwife.

† The case is urgent.

Sent to (*name of doctor*).....

at (*address*)

Time of sending message.....

The midwife shall make two copies of the above, making with the original document three forms in all. The original she shall keep, the second she shall hand to the patient's representative in accordance with Rule 18, and the third she shall send to the Local Supervising Authority as soon as possible, but within 24 hours at the latest.

(b) Form of Notification of Death.

To the Local Supervising Authority of the ‡Administrative County of

or †the County Borough of

or †the Urban or Rural District of

I, the undersigned, being a Midwife holding the Certificate No..... of the Central Midwives Board, hereby notify that the following death occurred in my practice on the day of....., 19....., before a registered medical practitioner was in attendance.

* Here fill in name of patient.

† If the case is not urgent cross this out.

‡ Strike out the words not applicable.

Name of Midwife
 Address of Midwife
 Name of deceased
 Address of deceased
 Age
 Date of Delivery

(c) Form of Notification of Stillbirth.

To the local Supervising Authority of the *Administrative
 County of
 or *the County Borough of
 or *the Urban or Rural District of

I, the undersigned, being a Midwife holding the Certificate No.
 of the Central Midwives Board, hereby notify
 that, on the.....day of19....., I
 delivered.....living at
of a stillborn
 child, no registered medical practitioner being in attendance.

Sex
 Full term or premature (No. of months)
 Condition of child (whether macerated or not).....
 Presentation
 Name of Midwife
 Address of Midwife

22. A midwife shall keep a Register of Cases in the following form :—

No.
 Date of expected confinement
 Name and address of patient
 No. of previous labours and miscarriages
 Age

* Strike out the words not applicable.

Date and hour of Midwife's arrival	
Date and hour of Child's birth	
Presentation	
Duration of 1st, 2nd, 3rd stage of labour	
Complications (if any) during or after labour	
Sex of infant.....	Born living or dead
Full time or premature—No. of months	
If Doctor sent for	Name of Doctor
Date of Midwife's last visit	
Condition of Mother then. (See Rule 11, above.).....	
Condition of Child then	
Remarks†	

*23. The Local Supervising Authority shall make arrangements to secure a proper inspection of the Register of cases, bag of appliances, etc., of every midwife practising in the district of such Authority, and, when thought necessary, an inspection of her place of residence, and an investigation of her mode of practice.

24. The rules or parts of rules in this section (*E*) which are marked with an asterisk shall not apply to midwives exercising their calling under the supervision of a duly appointed medical officer within Hospitals approved by the Central Midwives Board.†

25. Nothing in this section (*E*) shall apply to certified Midwives exercising their calling in Workhouses or Poor Law Infirmaries under the supervision of a duly appointed medical officer.

26. The proper designation of a certified midwife is "Certified Midwife," thus *e.g.*

Mary Smith,
Certified Midwife.

No abbreviation in the form of initial letters is permitted, nor any other description of the qualification.

† If any drugs, other than a simple aperient, have been administered, state here their nature and dose, the reason for giving them, and the stage of labour when given.

* See Rule 24.

† These Rules are Nos. 5, 11, 18, 19, 20 (1), 21, and 23.

F.—DECIDING THE CONDITIONS UNDER WHICH MIDWIVES MAY BE SUSPENDED FROM PRACTICE.

In carrying out Section 8 (3) of the Midwives Act it shall be the duty of the Local Supervising Authority to suspend a Midwife from practice who has contravened any of the rules laid down by the Central Midwives Board for the purpose of preventing the spread of infection, and in the exercise of that duty the Local Supervising Authority shall, after communicating their decision in writing to the Midwife concerned, at once report any suspension (with the grounds thereof) to the Central Midwives Board.

G.—DEFINING THE PARTICULARS REQUIRED TO BE GIVEN IN ANY NOTICE UNDER SECTION TEN OF THE ACT.

The particulars required to be given in any practice under Section 10 of the Midwives Act 1902 shall be as follows :—

(1) The number and date of the certificate granted by the Central Midwives Board to the person giving the notice.

(2) Her Christian name and surname in full, and if married since the grant of her certificate, the name under which it was granted to her.

(3) Her usual place of residence, and if she carries on her practice elsewhere, the address also where she practises.

(4) If she practises or acts as a midwife outside the area within which she usually resides or carries on her practice, the date and address at which she commenced to practise or pursue her calling without such area.

(5) The notice shall be in the prescribed Form. (Schedule, Form VIII.)

SCHEDULE

Forms of Applications and Certificates required under the Rules

APPENDIX OF FORMS.

FORM I.—*Certificate of Good Moral Character.*

(See Section B 1 (c) above.)

I certify that I have been personally acquainted with.....
for a period of..... years, and that she is trust-
worthy, sober, and of good moral character.

Dated this.....day of.....19.....

Name

Address

Position and authority for signing.....

Signature of applicant

FORM II.—*Central Midwives Board.*

(2 Edw. 7. c. 17.)

No. Date

We hereby certify that.....
..... having passed the Examination of the
Central Midwives Board and having otherwise complied with
the rules and regulations laid down in pursuance of the Mid-
wives Act, 1902, is entitled by law to practise as a midwife
in accordance with the provisions of the said Act and subject
to the said rules and regulations.

..... } Members.
..... } of the
..... } Board.
..... Secretary.

FORM III.—*Certificate of Attendance on Cases.*

(See Section C 1 (1) above.)

I certify that.....
 (to whom this certificate refers) has, under my supervision,
 and to my satisfaction, attended and watched the progress of
 not fewer than twenty labours, making abdominal and vaginal
 examinations during the course of labour, and personally deliver-
 ing the patient.

Dated this.....day of.....19.....

Name

Address

Position and authority for signing

Signature of applicant

FORM IV.—*Certificate of Attendance during the Lying-in Period.*

(See Section C 1 (2) above.)

I certify that.....
 (to whom this certificate refers) has, under my supervision,
 and to my satisfaction, nursed twenty lying-in women during
 the ten days following labour.

Dated this.....day of.....19.....

Name

Address

Position and authority for signing

Signature of applicant

FORM V.—*Certificate of having Attended a Course of Instruction.*

(See Section C 1 (3) above.)

I certify that.....
 (to whom this certificate refers) has attended, to my satis-
 faction, a course of instruction in the subjects enumerated in
 Rule C 4, extending over a period of not less than three months,
 and consisting of not less than fifteen lectures, and has shown

that she possesses sufficient elementary education to enable her to read and to take notes of cases.

Dated this.....day of.....19.....
 Name
 Address
 Professional Qualifications.....
 Position and authority for signing.....
 Signature of applicant.....

FORM VI.—*Statutory Declaration by Applicant for Restoration of Name to the Midwives Roll.*

(See Section D (13) above.)

(1) I, the undersigned^a.....^aInsert full name.
 of^b^bInsert address.
 say on oath that the following are the facts of my case,
 and the grounds on which I seek the restoration of my
 name to the Midwives Roll.

(2) On the^c.....day of.....19.....my^cDate of Certificate granted by the Central Midwives Board.
 name was duly enrolled by virtue of the following
 qualification, namely

^d^dQualification appearing on Certificate.

(3) At an inquiry held on the^e.....day of.....^eDate of inquiry.
 19..... the Central Midwives Board directed my name
 to be removed from the Midwives Roll and my certificate
 to be cancelled.

(4) The offence for which the Central Midwives Board
 directed the removal of my name and the cancelling of
 my certificate was^f.....^fInsert charge on which name was removed.

^aInsert
place of
residence.

^bInsert
occupation.

ⁱInsert
proposed
place of
practice.
^jAll the
facts and
reasons in
support of
the applica-
tion should
be stated
shortly and
clearly.

(5) Since the removal of my name from the Roll
I have been residing at^a.....

and my occupation has been^b.....

(6) It is my intention if my name is restored to the
Roll to practise as a Midwife atⁱ.....

(7) The grounds of my application are^k

(Signed)

Declared at

on the.....day of19.....

Before me

A Commissioner of Oaths.

FORM VII.—*Certificate in Support of Application for
Restoration of Name to the Midwives Roll.*

(See Section D (14) above.)

I,
of
certify as follows :

^aState
whether
Justice of
the Peace,
Minister of
Religion, or
registered
Medical
Practitioner
and give
particulars
of position.

(1) I am^a

(2) I have been and am well acquainted with the
said
both before and since her name was removed from the
Midwives Roll.

(3) The said
is the person whose name formerly stood in the Midwives
Roll, with the following address and qualification :—

^bInsert ad-
dress and
qualification
ⁱformerly
ren in
dwives
/.

^bAddress

Qualification

(4) The said
is now trustworthy, sober, and of good moral character.

(5) I have read paragraphs (5) and (6) of the application, and the statements therein contained are to the best of my knowledge, information, and belief true.

Signature

Address

Position and authority for signing

Date

FORM VIII.—*Midwives Act, 1902, Section 10.*

To the Local Supervising Authority of *the Administrative County of.....

*or the County Borough of.....

*or the Urban or Rural District of.....

I, A.B.

*(formerly)

holding a certificate from the Central Midwives Board,

No....., dated the.....

of.....19....., hereby give you

notice *(a) of my intention to practise as a Midwife within your area during the year commencing 1st January, 19.....

*or, (b) that on the.....day of.....

in this year, I acted as a Midwife at.....

....., within your area.

.....(Signed) A.B.

Residing at.....and

pursuing my calling at.....

Dated this.....day of.....19.....

* Strike out the words not applicable.

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When a technical word in the index is printed in italics, its derivation will be found on the page given.

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